Amateur Radio

Vol. 50, No. 4 APRIL 1982
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JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

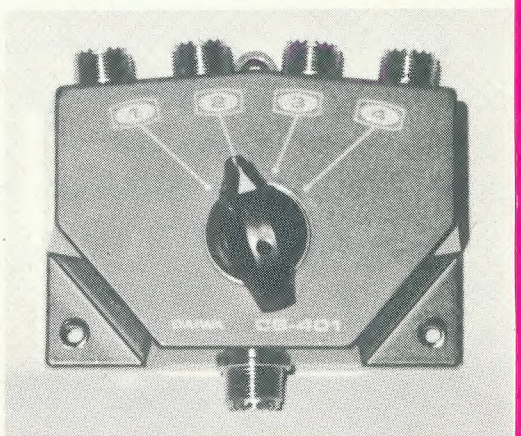
REVIEW OF THE ICOM IC730

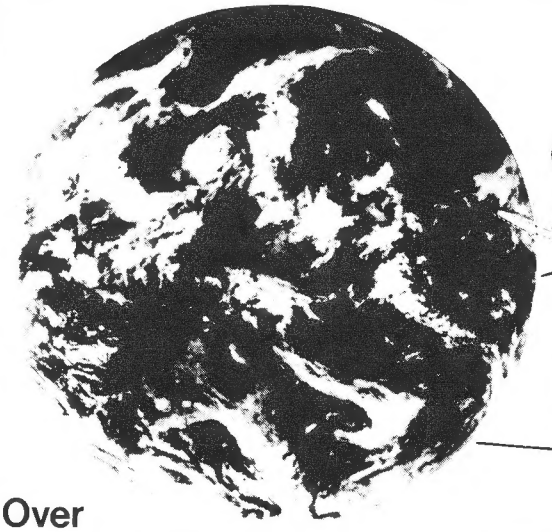
A Three Band Vertical

Capacity Meter with Auto Ranging

The Australian Broadband Dipole

Competition: **WIN THIS SWITCH**





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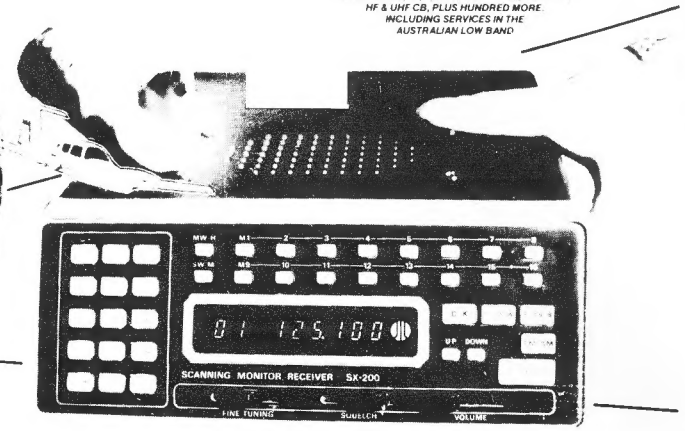

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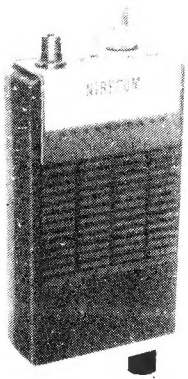

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Memory Channel:	16 Channels
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Scan Delay:	0, 3 or 4 seconds
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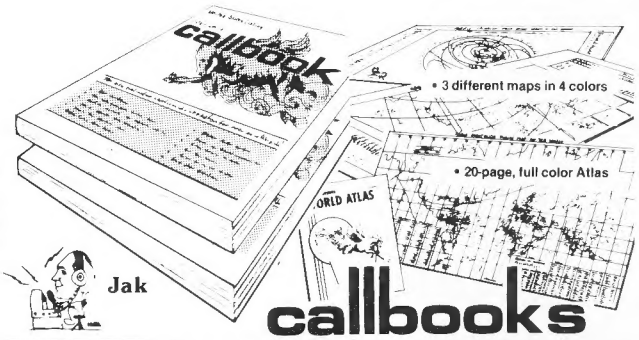

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Registered Office:
3/105 Hawthorn Road,
Caulfield North 3161.
Tel. (03) 528 5962

EDITOR:
BRUCE BATHOLS* VK3UV

TECHNICAL EDITORS:
BILL RICE* VK3ABP
EVAN JARMAN* VK3ANI
RON COOK* VK3AFW
GIL SONES* VK3AUI

CONTRIBUTING EDITORS:
BOB ARNOLD VK3ZBB
ROY HARTKOPF* VK3AOH
RON FISHER* VK3OM
ERIC JAMIESON VK5LP
LEN POYNTER* VK3BYE
BILL VERRALL VK5WV
KEN McLACHLAN VK3AH
REG DWYER VK1BR
ROBIN HARWOOD VK7RH

DRAFTING:
PETER KIMBER
SUZY ZLOCH

BUSINESS MANAGER:
PETER DODD VK3CIF

***Member of Publications Committee**

Enquiries and material to:
The Editor,
PO Box 150, Toorak, Vic. 3142

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amateur radio

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WIA NEWS

AX PREFIX

Many may have forgotten that the AX prefix will be available from 15th August to 15th October 1982 inclusive. The letter of authority from DOC concerning this is reprinted here once more —

"I refer to your letter of 15 September 1981 relating to a request for the special call sign prefix "AX" to be made available for Amateur Station use during the 1982 Commonwealth Games in Brisbane.

I am pleased to advise that in accordance with the mutually agreed guidelines for the use of special amateur callsigns, approval is granted for the "AX" prefix to be available for optional use by all Australian Amateur Stations during the period of 15 August 1982 to 15 October 1982 inclusive, to mark the occasion of the Commonwealth Games.

It would be appreciated if you could publicise the matter via the usual channels available to the Institute."

FEDERAL AWARDS MANAGER

Reminder. By the time you read this the work of the Federal Awards Manager will have changed hands from Bill Verrall VK5WV to Mike Bazeley VK6HD.

IARU R3 ASSOCIATION

Normally this would appear under "International News". However, Peter Wolfenden VK3KAU, the Federal President, and David Wardlaw VK3ADW, the WIA's Joint IARU Region 3 Liaison Officer, will be attending the Association's triennial conference in Manila from 2nd to 5th April. In addition, Michael Owen VK3KI will be attending in his own right as a Director of the Association. See "International News" for further details.

1982 FEDERAL CONVENTION

It was hoped that most of the Agenda Items for the Federal Convention would have been submitted in sufficient time to be publicised in this issue of AR. This has generally not eventuated this year but an item submitted by VK5 proposes a "Special Purposes Fund" centrally as a reserve for the costs of supporting litigation involving amateurs in such matters as towers, TVI interference, etc. An item submitted by the Executive seeks to discuss the agreement reached with DOC for the optional use of the AX prefix for events of national importance.

Another Executive items draws attention to WCY83. 1983 has been proclaimed by the United Nations General Assembly as World Communications Year for world-wide preparations and general co-ordination by the ITU. Amateur radio has a place in any proposed activities. Incidentally, World Telecommunication Day this year is 17th May. Forward planning matters initiated at last year's Convention are to be further discussed and finalised, resulting from the excellent work carried out by VK1RH and VK4DT.

MAGPUBS

As a generality, stocks of reference books are satisfactory, but overseas mailings are taking a longer time to reach us than in years gone by. A WIA international diamond style of badge with a scroll upon which to engrave or emboss the owner's call sign should shortly become available. ■

SSB, THE SPECTRUM SAVER?

Another quotation from TT by Pat Hawker G3VA in February 1982 Rad. Comm. could be a useful discussion topic:—

"One cannot help feeling that the additional complexity of ACSB is yet another indication that perhaps professional communications engineers should have paid more heed to the many warnings, 20-25 years ago, given by J. P. Costas W2CRR that unprocessed SSB was an INFERIOR system in a number of respects to DSBSC, and in non-channellized bands does not even result in saving spectrum! Recently Dick Rollema, PA0SE, brought to my attention the forceful four-page letter Costas wrote to 'Proc IRE' (April 1957, pp. 534-7). While his valiant battle for double-sideband was, it would seem, irretrievably lost many years ago, I cannot refrain from a few extracts:—

'A significant increase in usable channels cannot be obtained by use of SSB except in those very special communications applications where the dynamic range of received signals can be controlled . . . Again let me repeat that the DSB(SC) system represents an improvement over the present AM system. I would like to remind the reader that we may be far better off to improve what we now have rather than to seek a cure for our present problems by discarding completely the old, and accepting something entirely different. This statement may draw the accusation that the writer is not of a progressive frame of mind. I would deny this by stating that progress and increased complexity are not necessarily synonymous. True progress in my mind is achieved when improvements are obtained without a significant increase in complexity . . . The vast majority of those people who promote and defend SSB are forward-looking people who have seen the advantages of a new system and are anxious to put it into general use for the common good. As commendable as this attitude might be, there has been the tendency on the part of many of these people to make a 'sacred cow' out of SSB . . . true progress will be hindered rather than helped by such an attitude.'

That was 1957, since then SSB has served amateurs well and few now regret that the double-sidebanders lost the argument . . . but the evidence accumulates that they were right! ■

DOUBLE-SIDEBAND (DSBSC) TRANSMISSION

Although some amateurs from time to time have used DSBSC on the air, they generally receive little encouragement from those who feel that no transmission in crowded amateur bands should 'occupy' more bandwidth than is absolutely essential. At first sight this seems a logical enough viewpoint until one delves fairly deeply into the cogent and detailed arguments that were advanced by Costas to show that, in non-channellized bands, narrowband SSB is excessively vulnerable to interference and does not actually result in spectrum saving.' ■

BRAILLE READER

The Telecommunication Journal of the ITU for Jan., '82, records the debut of a braille reader, for use with Prestel video tax service, at the National Aids for the Disabled Exhibition on 21st October, 1981, in the U.K. The TV screen is replaced by a flat box about the size of an attache-case. Recessed into its surface is an array of tiny flat-topped pins. Electronic equipment raises selected pins to create in braille the information being called up from the Prestel computer. Production models are expected to become available in 1982. ■

SAFETY HAZARD — TDI

What is TDI? Toluene di-isocyanate. In vapour form irritating and harmful to the eyes and respiratory system — asthmatic attacks may result from exposure unless under good ventilation conditions. TDI vapour is given off when soldering copper wire with a synthetic enamel based on a polyurethne film. This kind of solderable varnish may also be used on many printed circuit boards. Rad. Comm. TT, February 1982. ■

JOTA 1982

Book the days 16th and 17th October, 1982 for the 25th Jamboree on the Air. Special participation in the event ths year is requested to mark this anniversary. A special call sign, VK4SAJ, has been allotted to the Queensland Br. H.Q. a.r. station for use during the 13th Australian Jamboree at Collingwood Park, near Ipswich, for the period 29th December, 1982 to 7th January, 1983. This call will also be heard from the same site during JOTA. ■

QSP

The Way Ahead

The preservation of a piece of open space within a rapidly developing district is perhaps only akin to retaining the concept of amateur radio within our "exploding" communications scene.

Superimposed is the obvious need for members, for without a large amateur population there would be little strength. On the local scene strength provides the means for bargaining with governments and authorities — on the international scene, the more countries with organised amateur radio, the more chance we have of maintaining spectrum allocations particularly at international conferences such as World Administrative Radio Conference.

During April, the Region III Association of the International Amateur Radio Union will be meeting in Manila to seek (amongst other things) ways of promoting amateur radio in this part of the world, i.e. generally the Asia/Pacific area.

Besides considering reports from the various Societies represented, consideration will be also be given to matters like International licenses, future microwave band requirements, intruder watch, EMC, International beacon projects, etc.

Amongst the papers prepared by the WIA will be one dealing with the first five years of the Australian Novice Licence. Without detailing the report here, it is worth noting that in general Australian Novices ARE upgrading. Indeed a recent survey revealed that 56 per cent of Novices who obtained their licenses five years ago have upgraded, 44 per cent to Full Calls and 12 per cent to Limited or K Calls. These figures do not take drop-outs into consideration (approx. 8 per cent). Of course we have no way of knowing how many of the sample surveyed were not active but merely were reserving their callsigns.

A similar trend exists for those Novices holding licences for three years, although as to be expected, the upgrading rate was not quite as high.

The point is that if a Novice holds his licence for five years, he is likely to upgrade — the actual rate of ACTIVE Novice upgrading is impossible to determine, but it could be as high as 75 per cent.

The significance of this is that the Australian Novice licence scheme IS working — as many, including the Institute, had hoped it would — i.e. by providing the first easy stepping stone for interested members of the general public to enter the world of amateur radio.

It follows that countries which may wish to swell their amateur ranks could take advantage of our type of Novice licensing and thereby increase the world's amateur population and bargaining power.

The United Nations has declared 1983 as World Communications Year (WCY '83) which is another matter to be raised by Australia at Manila: the need for involvement of amateurs in WCY '83.

WIA's view is that amateurs surely have a place in the proposed celebrations and activities. Australia is recommending to IARU that amateurs do become involved and thus the IARU seeks means of helping, especially the smaller amateur societies, in developing countries.

I am sure that you will be learning much more about WCY '83 in the coming months.

TO SURVIVE, AMATEURS MUST BE PART OF THE PUBLIC — NOT REMOTE FROM IT.

What do you think?

P. A. WOLFENDEN VK3KAU
Federal President ■

Grind, Ground, Grounded — an Abrasive Subject

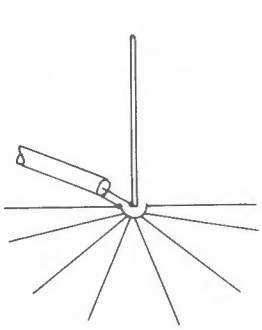
By Joe K5JB

Hardly a magazine is published, particularly one containing an article on antennas, or equipment safety, that doesn't contain some reference to equipment grounding, or grounding for some RF circuit purpose. We who live in an area of high probability of thunderstorms are acutely aware of the need to provide proper grounding for lightning protection. We all agree, I'm sure, that it is desirable to provide good ground connection between items of equipment for reasons of safety. The subject of grounding I thought might bear some discussion is that related to antenna circuits where earth ground acts as an active part of an antenna. The same thoughts on the subject also relate to grounding of equipment to eliminate the "hot microphone" syndrome.

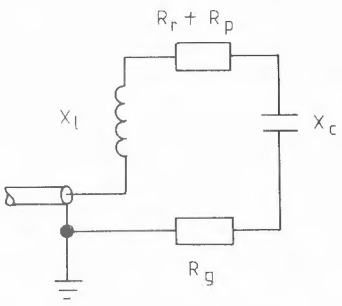
What brought the subject to mind was a recent magazine article which contained the information that the writer had to drive a 40 foot ground rod to obtain a good earth connection! On 40 metres, 30 feet, or so, is a quarter wavelength. A ground 40 feet long is no more an RF ground as a strand of wet grass. Counterpoise, maybe, but ground, no. In reality, what the fellow had was half of his antenna buried, and that doesn't make for such good effiicency. It might help to visualise an antenna circuit like shown in Fig. 1 before we go into the heavy stuff.

The quarter wave ground plane shown in the figure could be UHF, VHF, HF, or whatever, the principle being the same. The problem is more recognizable at HF because more amateurs experiment there. At VHF and UHF it is more common to "buy it and stick it up", besides, the ground plane is relatively small and is fabricated as part of the antenna anyway. The ground plane shown in the figure is about as real as the "free space radiation pattern". If one could pave a lot with sheet metal for a distance of ¼ wavelength radius from the base of an antenna, he could make some fair assumptions regarding the radiation resistance of his ground plane. No doubt someone has done that but the most elaborate effort usually attempted is to put a hundred or so wires in the soil, radiating from the base of the antenna. In the ordinary installation, the antenna circuit can be represented by the equivalent electrical circuit shown on the right side of Fig. 1.

XL and Xc are equal in magnitude and simply mean the antenna is being represented by a series resonant circuit. In a series resonant circuit, current is a maximum at resonance. The current through the resistor represented by Rr plus Rp is also maximum at resonance. Rr is the radiation resistance, a concept that pretends that all the RF energy radiated is being dumped into a resistor. Rp is a parasitic resistance caused by skin effect in wire, dielectric losses, etc. In a well designed antenna, Rp is small. In a Hustler mobile whip Rp is large. In a mobile installation, for example on 80 metres, radiation resistance may be 5 ohms. If the feedpoint impedance of a simple loaded whip without matching network approaches 50 ohms, there is a loss resistance somwhere totalling 45 ohms. Some of this is the Rp in the coil and some is the Rg shown in Fig. 1. Power fed from the transmitter is divided between these resistances in proportion to the values of the resistances. In this example, one-tenth of the transmitter power is fed to the radiation resistance and nine-tenths is fed to the loss resistances. Efficiency is 10 per cent. In this case, the signal will be 10 dB down from a 100 per cent efficient antenna, which is impossible to have on a car anyway. Fifty per cent efficient is probably a more reasonable goal on 80 metres.



QUARTER WAVE GROUND PLANE



EQUIVALENT CIRCUIT

FIG.1 ANTENNA CIRCUIT GROUNDING

At the fixed location, grounding is not so drastic a problem. The antennas are much bigger than an auto whip. Radiation resistance on 80 metres might range from 15 ohms on a trapped vertical to 35 ohms on a full quarter wavelength vertical. If a perfect ground plane can be assumed, and SWR is measured to be near one, it is safe to assume losses in the coils of the trapped antenna are contributing the 35 ohms to add to the 15 to get 50. The ground plane can be more likely assumed to be less than perfect so part of that 35 ohms will be found in the ground connection. On the full sized quarter wavelength antenna there will be some loss from skin effect but it is a good bet that there will be a major loss from the ground connection. Without an antenna bridge, it is difficult to tell if SWR other than one is caused by feedpoint impedance greater or less than the characteristic impedance of the transmission line. If someone told me he measured 1.5 to 1 on a quarter wavelength vertical made of aluminium tubing, I would bet the feedpoint impedance was about 75 ohms (if the measurement was made at resonance). About 35 ohms of this would be radiation resistance, the remaining 40 ohms would probably be 10 ohms or less in the tubing and 30 ohms, or more, in the ground connection. In any case, I would consider this a pretty good antenna system (for a vertical). The loss would be only about 3 dB over a perfect antenna.

Where the real problem arises is where a loaded antenna 20 feet long is made to resonate on 80 metres. With a 50 ohm feedpoint impedance, about 35 ohms is sneaking around in the circuit somewhere soaking up two-thirds of the transmitter output. With a mediocre ground consisting of a single ground stake, probably more than 80 per cent of the RF is contributing to the discomfort of the resident earthworms.

Driving several ground stakes has two beneficial effects. Multiple ground leads divide the inductance like parallel resistors. Each ground stake creates another current path into the surface of mother earth. I doubt the effectiveness of salting the ground around a ground stake unless it is done for a considerable distance around the stake, perhaps a radius of 8 or 10 feet.

One way to avoid the problem of poor ground conductivity if one insists in using a vertical antenna, is to put up a half wave length antenna. Fred W5NL and I succeeded in doing that last fall on our trip to Pagosa Springs. We took advantage of some tall pine trees and put a top loaded half wave up and tuned it with a matchbox at the bottom. This is the only vertical HF antenna I ever used that worked as well as the dipole. With the thing voltage

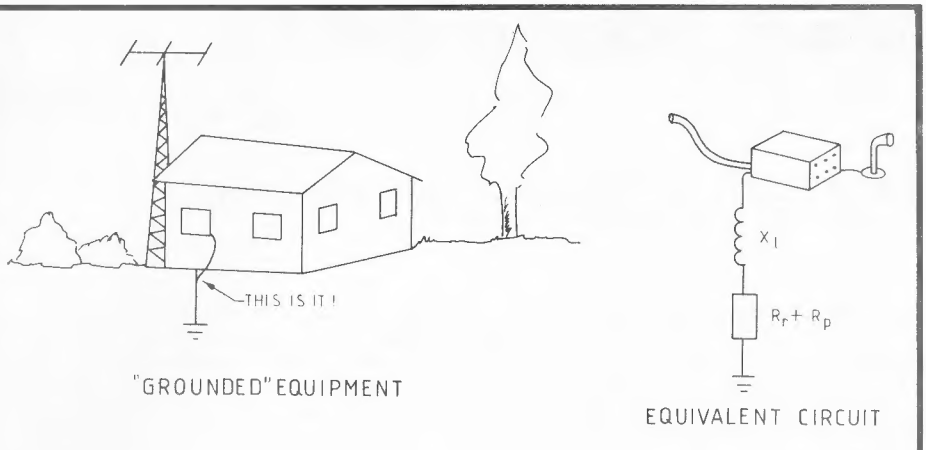


FIG. 2 EQUIPMENT GROUNDING

fed, current at the feedpoint was so small that any crummy ground was good enough. Feedpoint impedance was probably a couple of thousand ohms. With a couple of hundred ohms in the ground connection, it was no big deal. SWR was at least 40 so we had to use the matchbox!

RF grounding of equipment is another crazy subject where a lot of mistakes are made. Unless a ground wire is very short, it will have a high enough impedance to act like a choke and hardly any RF current will flow at all. The worst case is a quarter wavelength of wire. In fact, in some antenna and transmission designs, quarter wavelength components form "metal insulators". If it is more than 6 or 8 feet from a hot piece of equipment to the "earth ground" electrode, one might as well forget grounding as a cure for the "biting microphone" problem. It would probably be better, in that case, to eliminate the cause of the "hot equipment". In theory, one can tune the ground lead to series resonance by adding a suitable coil or capacitor. Multiple ground leads would be needed if the problem occurs on more than one band.

Fig. 2 shows a typical "grounded" system with a ground wire running out a window to a ground stake. The ground stake can be perfectly connected to mother earth but unless the ground lead is very short, the circuit formed will resemble the equivalent circuit shown in the figure.

In the equivalent circuit, XL is the inductance of the ground lead. Rr and Rp are the radiation and parastic resistances, respectively. They may be small compared to the inductive reactance of the wire and may be insignificant if the inductance is tuned out with a suitable capacitor to bring the ground lead to resonance. Rr is the same radiation resistance of any antenna though and the ground lead will be radiating and adding to the field of the antenna, Perhaps distorting the design pattern of the antenna. If this type of ground lead is intended to solve the "Hot Mike" situation, it may be effective in reducing the problem, but again, it would probably be better to eliminate the source of high RF voltage on the equipment.

Grounding for lightning control purposes should be handled differently. Ground leads should be direct from the air terminal (antenna) to the ground point. Large diameter wire should be run from the antenna to the ground without any sharp bends (unnecessary inductance). The ground should have less than 25 ohms resistance to mother earth.

Grounding between equipment can be tricky sometimes. Safety grounding is not too difficult because almost any old wire will do. If there is a ground fault in equipment, any wire capable of conducting enough current to open a fuse or circuit breaker will be a suitable safety ground. If three wire plugs are used on all the equipment, no other safety grounds are needed. RF grounding is another story. I had one particularly sensitive item of equipment that required two ground wires of different lengths to settle an audio problem down when operating the legal limit on HF. The cause of the problem was an untidy antenna installation but correction of the problem was like fixing a leaky roof, when it was time to call a net, there wasn't time to mess with the antenna. I just grabbed a bucket and put it under the leak.

One common cause of unwanted RF in the shack is unfortunate choice of feedline length and antenna layout creating highly efficient receiving antenna situations, with the equipment on the shack falling near a voltage loop. One favourite example is an 80 metre antenna fed with 60 feet of coax (stand by, this has NOTHING to do with pruning coax to lower the SWR). One leg of such an antenna and the shield of the coax is half a wavelength long. With such tight coupling, voltages and currents can be quite high at certain points. With a kilowatt fed to the antenna, about 1700 volts will appear on the ends of the antenna. If coupling is good and there is no control of the RF voltages on the equipment, similar voltage can appear on the microphone, creating a serious case of lip burn, to say the least! Of course, this kind of voltage will never appear in real life but the lips are sure sensitive to lesser amounts!

The most common solution to this kind of problem is to change the resonances of the antenna/transmission line system. A few turns of coax at the antenna feedpoint or a few feet added or removed from the transmission line will usually do the trick. One of the antenna manufacturers used to routinely advise about three or four turns be wound in a four or five inch circle and be taped to the boom of the antenna near the feedpoint. This is much better advice than adding a balun which MAY serve the same purpose, even if it is unnecessary for any other reason, on HF anyway.

Referring to the old wives' tale of pruning the coax to lower than SWR, or using the "proper" length of coax, I feel that this myth was started partly by the phenomenon of certain SWR bridge designs being sensitive to RF voltages present on the outside of the coax, and thus, on the case of the instrument. No, the voltage on the inside is not necessarily the same as the voltage on the outside of the coax. That's the neat reason for its invention. The same effect that causes the spurious responses of this type of instrument is what causes all the grief in the shack.

When it is impossible to reach ground from the equipment location, the concept of the counterpoise can be applied. In an apartment, for example on the tenth floor, ground is too far away to be of any use except for lightning protection, as already noted. A piece of wire draped out the window can act as a virtual ground by virtue of the radiation resistance it represents. Usually a quarter wavelength wire is used as a counterpoise, its radiation resistance is low, compared to no ground at all, and it will serve the purpose of stabilizing the RF voltage on the equipment. Counterpoises are used as an active part of antennas when it is not possible to obtain a ground in any other way. Since considerable amount of current can flow in a counterpoise if the driving source is low impedance, radiation from the thing can be considerable. If one is being used to stabilize nuisance voltages on equipment, driving impedance is probably low, and resulting radiation will probably be low. A separate counterpoise is needed for each band, except where odd harmonics are involved and the thing can be operated as a 3/4, 5/4, etc., wavelength mode. Simplest thing I ever did in this regard was tie a wire to a fishing sinker and adjust the length as necessary to match the band of operation. One time I ran several wires around in a motel room to form the counterpoise. One was attached to the commode, one to a convenient outlet ground and one left lying on the floor, extending to the far corner of the room. If the antenna being used is voltage fed, the ground can be pretty casual, as illustrated in Fred's and my experiment with the half wave vertical.

Well this turned out to be a lot of rambling about a rather mundane subject, but perhaps it might provoke some thought. ■

Reproduced by arrangement from "Collector and Emitter", Central Oklahoma Radio Amateurs Bulletin, October, 1981.

Are You Insured?

Jim Joyce VK3DFD
44 Wren Street, Altona 3018

Mid-afternoon on Saturday, 24th January, 1982, a mini tornado swept through many suburbs of Melbourne, leaving a path of destruction.

The day I found out how good my insurance company was, was the day we had a mini tornado come through Altona (Vic.). My near new Nally wind-up tilt-over tower and TH6DXX had no hope against a wind that left a path of damage unheard of in this area in living memory. 100-year-old pine trees that were up to 8 feet across came down like match sticks, unfortunately killing two people. The local park looked like a battlefield, with many people seriously injured, as the park was filled with people trying to get relief from the 40 degree temperature at the local beach. Luck was with a chap trying out his small 10 foot sailing dinghy on the local lake. When the wind hit, he was under full sail. He took off across the water at a speed that would have left Ken Warby, the water speed record holder, envious, across 100 metres of grass bordering the lake, still in the boat, across a divided highway (luckily the cars had stopped due to the storm) and disintegrated his boat against a chainwire fence, about 250 metres from the nearest water, a very groggy yachtsman. I wonder how he explained his accident to his insurance assessor. He would be the first man to break both the water and land speed record within 30 seconds.

The damage to tower and beam plus the back fence blown down and tiles missing from our house roof, the damage to this QTH was also above the minor degree. As far as I was concerned, of course, the first job was to get back on air (after fixing leaks in the roof and propping up the back fence).

The insurance assessor was down the next morning asking to see the major damage. "There," said I, pointing to the tower and beam. He surveyed the scene, the result being that I had to get a quote for the tower repairs and new beam, and he would organise the house repairs. Two days later the tilers arrived, but the antenna and beam were up to me. After ringing the Sydney agents of Hygain, I was informed that a quote would be in the mail that week, which it was. Unfortunately, there were no TH6DXXs in stock, and one would have to be shipped from the States. The tower was no problem, after ringing Nally Towers I was informed that no top sections were made up, but they would get one started that week and have it installed within a fortnight. So I now had a quote on a TH6DXX from Sydney, $492 plus shipping $8, total $500 for the beam, and a quote from Nally Towers, $285, plus fitting new section, remove rotator, beam, and refit, total $420. Total cost of damage, $920. After finding out the cost I rang our insurance agent. He said no problems, first get it fixed and we will forward the cash. Any difficulties paying bills, send them to the company and we will pay them. They have got my business for life with that attitude.

REPAIRS

After settling that aspect, the next thing was to get back on air, one way or another. On looking at the tower, it had folded back against the fulcrum point, so to get it down meant a block and tackle attached to the top of the tower and a tree base in the back yard, and by slackening off the tower winch and pulling on the block and tackle over came the tower until it was at ground level, with the broken part still looking up in the air at a 45 degree angle. With the aid of ropes and a hacksaw, that also was on the ground, the only problem being on the way down the rotator, having been upside down in the broken tower during the storm, had filled with rainwater, and as the tower came over, about two litres of water poured out of the CDE tail-twister rotator. "Oh no," I said, "looks like another call to the insurance agent", but on getting the broken part of the tower down and draining the rotator of excess water, spraying with liberal quantities of CRC and regreasing all parts, it worked like a charm. Of the broken tower, the part still left in the tower was soon removed with the same block and tackle and a crowbar and hacksaw. I finished up with 8 ft. of the top section of tower that went back into the bottom section, held in with muffler clamps. I now had a 25 ft. tower.

The next problem was what was left of the TH6DXX. What a mess. I started at the boom and found by cutting out three pieces that were bent at rightangles I finished up with a boom 2 ft. shorter than the standard. The reflector was also a mess, but by using a piece of the driven element and a sleeve, one side was fixed, the other side required an extra 2 ft. of bought aluminium, and it was fixed. Progressing this way up the elements, I finished up with three and a half original elements and two and a half elements of aluminium, bought at a local supplier. It pays to buy offcuts at $1 per piece. Total cost to repair beam was $12. I now own a TH3½? with a boom 2 ft. shorter and an upwards left-hand twist. Three of the traps were on the loose side. These were pulled apart, checked and sprayed with CRC.

A point to note here is the eerie whistling noises that used to come from the traps due to the wind blowing past the holes in the bottom. I found that covering the traps with electrician's tape, with silastic over the ends to stop the tape unravelling, and the holes in the traps opened up with rough edges, stopped the whistles and probably pleased the neighbours no end. All the joints and electrical contacts were covered with anti-corrosive paste.

Now for the crunch, would it work or was it all wasted effort? It was with great trepidation I cranked up what was left of the tower and beam. After putting the VSWR meter into circuit I found to my delight that I had:—

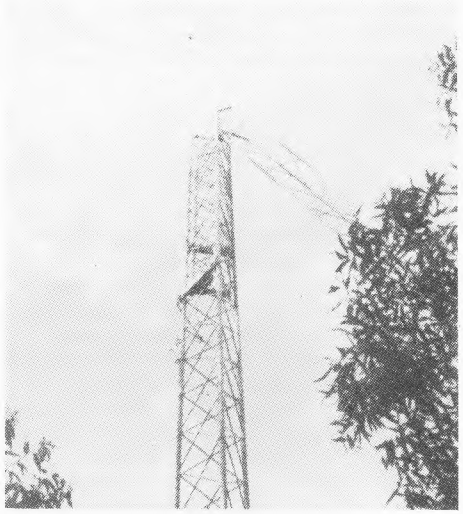
10 metres 1.3 : 1, 15 metres 1.4 : 1, 20 metres 1.3 : 1 at 27 ft. high.

It should improve at full height as it was 1.1 : 1 before the storm.

IT WORKS!

I thought this too good to be true, so listening to a dogpile, I found T2GMM working into the States at 5-8. On calling him, I got 5-9 + 20 dB. He was 5-8. We were back on air, total time was a week.

Conclusion, make sure you have a good insurance cover for your tower and beam, not just a cover against damage to property if it falls down. Pick a tower that is easy to get parts for in your local area. With our local shipping the way it is, it could take months to get replacement parts from overseas. Last, but not least, have an antenna that will work with a bit of a patch-up. I have nothing but praise for the way the TH6DXX performed after the bashing it got. Who knows, I might make a TH9DXX out of the two on a 36 ft. boom when the new antenna arrives from the States. What a job fixing that if it comes down in the next storm. Back to DX hunting. 73. ■



Jim's Tower

The Australian Broadband Dipole

A basic antenna, created in Australia, helps Botswana's News Service.

A paper titled "District Radio News Reporting — (A Low Cost Approach)", submitted to the East, Central and Southern African regional meeting of Broadcast Engineers by Mr. D. W. Harris, C.Eng., MIEE (A22BX), Deputy Director of Broadcasting (Enginering) at Radio Botswana, has been condensed due to space limitations, although the improvements developed by the Botswana engineers are reproduced in full, including diagrams for those that may wish to reproduce or further develop the aerial.

SUMMARY

The collection of news material for radio poses problems in many under-developed countries, where communications by road and telephone are unreliable and of poor quality over great distances.

This article describes an approach to the problem using HF transceivers in Botswana.

BACKGROUND

In common with many other developing countries, Botswana has internal communication difficulties. Roads are long and often poor in rural area. The telecommunications networks are hardly developed at all.

Therefore, a frequent criticism of Radio Botswana has been its lack of "Botswana news". It became necessary for the station to place a high priority on rapid passing of news from districts to the capital.

THE TECHNICAL PROBLEMS

An obvious solution was to use radio. VHF was useless, except for the most local Information Offices, due to distances, but HF is subject to all sorts of interference, and SSB, if used, has a limited band width unless highly sophisticated equipment is used. The choice of frequency is also critical to optimise signal-to-noise ratio and to accommodate frequency agility for remote installations would cause problems with aerials and tuning units. Also, there was the small obstacle of powering transceiver equipment.

Radio Botswana decided to investigate the use of HF SSB transceivers and overcome the problems involved. In the process, a low-cost aerial has been developed and some interesting information derived relating to non-technical staff tuning SSB signals.

THE TRANSCEIVER

A loose specification was drawn up and tenders invited from various commercial manufacturers for the supply of SSB transceivers.

The TR7 transceiver manufactured by M/s. R. L. Drake Co. offered the choice of receiver bandwidths, operation over the whole HF band, broadband output circuitry, a general-coverage receiver, 12 volt power supply and good serviceability.

One of the most difficult requirements was a "wider" transmit bandwidth. Reaction from conventional manufacturers to the request for a transmitted bandwidth greater than the standard 2.7 kHz was not good.

The TR7 has a 2.3 kHz wide filter fitted as standard but it is mechanically possible to fit any range of filters (intended for receiving only) into the "transmit" position. It was decided to try this although specifically warned against it by Drake engineers.

Tests were done with a Drake SL-6000 6 kHz broadcast filter, but they were not 100 per cent successful, so in the interests of establishing the network the transceivers were restored to their original transmit bandwidth (approximately 300 Hz-2.6 kHz) and installed. This was a startling improvement to the telephone network.

The TR7s were used for about a year and the non-technical operators quickly learned to adjust both received frequency and RF gain for best results. A modification was made to each set to allow patching a tape recorder into the transmit mode to enable passing of actual material, such as speeches, for "same day" rebroadcast, which had been virtually impossible with the telephone network previously.

When the SL-4000, a 4 kHz filter, became available, tests were again carried out. These tests proved to be successful and the resulting passband for a correctly adjusted filter/carrier combination is approximately 350-4500 Hz, a great improvement over the usual SSB bandwidth and the telephone network.

AERIALS

Due to many problems in the field with unskilled operators, seasonal changes, etc., there were difficulties to find an appropriate aerial. A broadband aerial, covering the 3-10 MHz range, was what was required, which could be simply fabricated and installed, preferably using local materials. There are very few designs which satisfy these requirements, and the TR7, in common with the new breed of solid state designs, is intolerant of a high SWR. Full output can only be obtained when the aerial is matched to within 2 : 1, although the set will still operate with a lower output if the matching is any worse than this.

A search through much technical literature eventually turned up a "Broadband Travelling Wave Dipole". This aerial was developed in the early 1970s and was claimed to have a relatively constant centre impedance of about 300 ohms over a wide bandwidth. A version was built, but it did not work but results were promising enough to merit further development.

After considerable trial and effort the version shown here was evolved. It differs from the original (AR, April, 1974 edition) by the addition of a third "tramline" down the middle. This simple addition resulted in a highly repeatable, non-critical aerial, which with the addition of a 6.25 : 1 balun showed less than 2 : 1 SWR from below 3 MHz to over 20 MHz. An important advantage of this antenna was it could be constructed very cheaply.

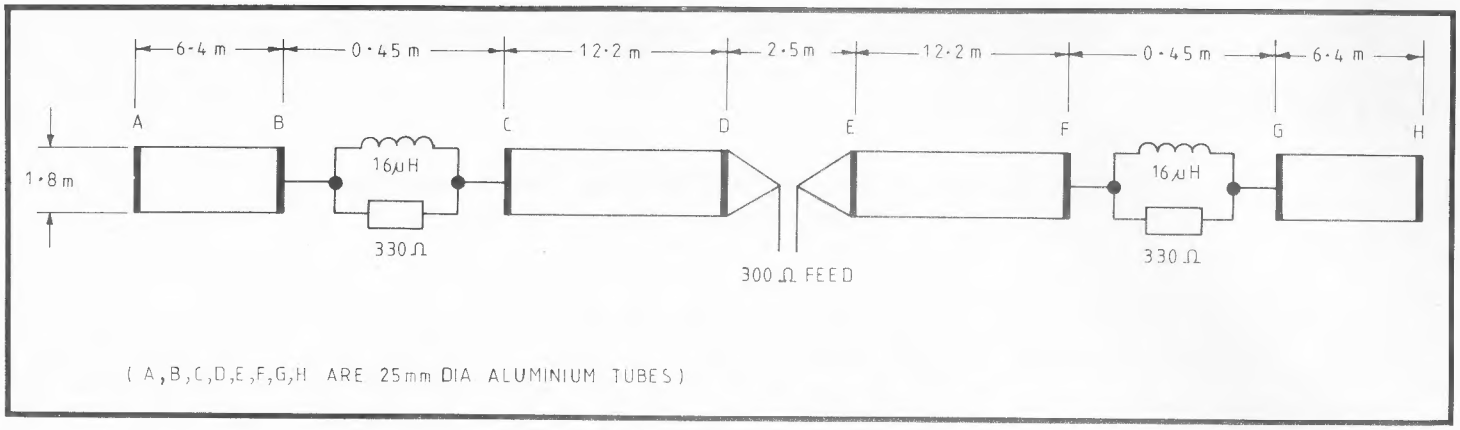
POWER SUPPLY

As there is no electricity supply at the Information Offices in the districts it was necessary to use batteries. The TR7 is essentially a 12V transceiver requiring about 1.8 amps on receive and up to 25 amps on transmit. Ordinary heavy duty car batteries were used but there were some difficulties to get them recharged, so it was decided to invest in solar panels. After a year of operation this has been entirely successful. A typical installation uses a 33 or 37 watt panel designed for 12 volt battery charging, with an anticipated battery life of around two years.

ACCURATE RESOLUTION OF SSB SIGNALS

Initially, doubts were expressed concerning the ability of the operating staff to accurately resolve incoming SSB signals. Many SSB transceivers are already in use in Botswana, by Government Departments, safari companies and the like, and a quick scan of the HF bands revealed appalling netting in many cases. It seems that, provided the recipient can make out what is being said, the "Donald Duck" sound is simply accepted as an unfortunate side-effect of SSB.

Naturally, accurate tuning was necessary if the received material was to be rebroadcast. It was a pleasant surprise to find that, after an initial training period, the news staff were able to hear mistuning and correct it using the usual RIT controls fitted to most commercial units. In this, they were helped by the digital display on the TR-7, which they seem to believe more than their own ears in some cases!



The original design

When the 4 kHz filters were introduced, the operational staff commented that it had become much easier to determine the correct tuning point with the extended bandwidth. There may be a lesson in this! No such improvement had been remarked on during the initial trials with a 6 kHz filter, but this was probably because of the intruding unwanted sideband noted earlier. It is also possible that they had not developed "communications ears" at that stage.

THE AERIAL (ORIGINAL DESIGN)

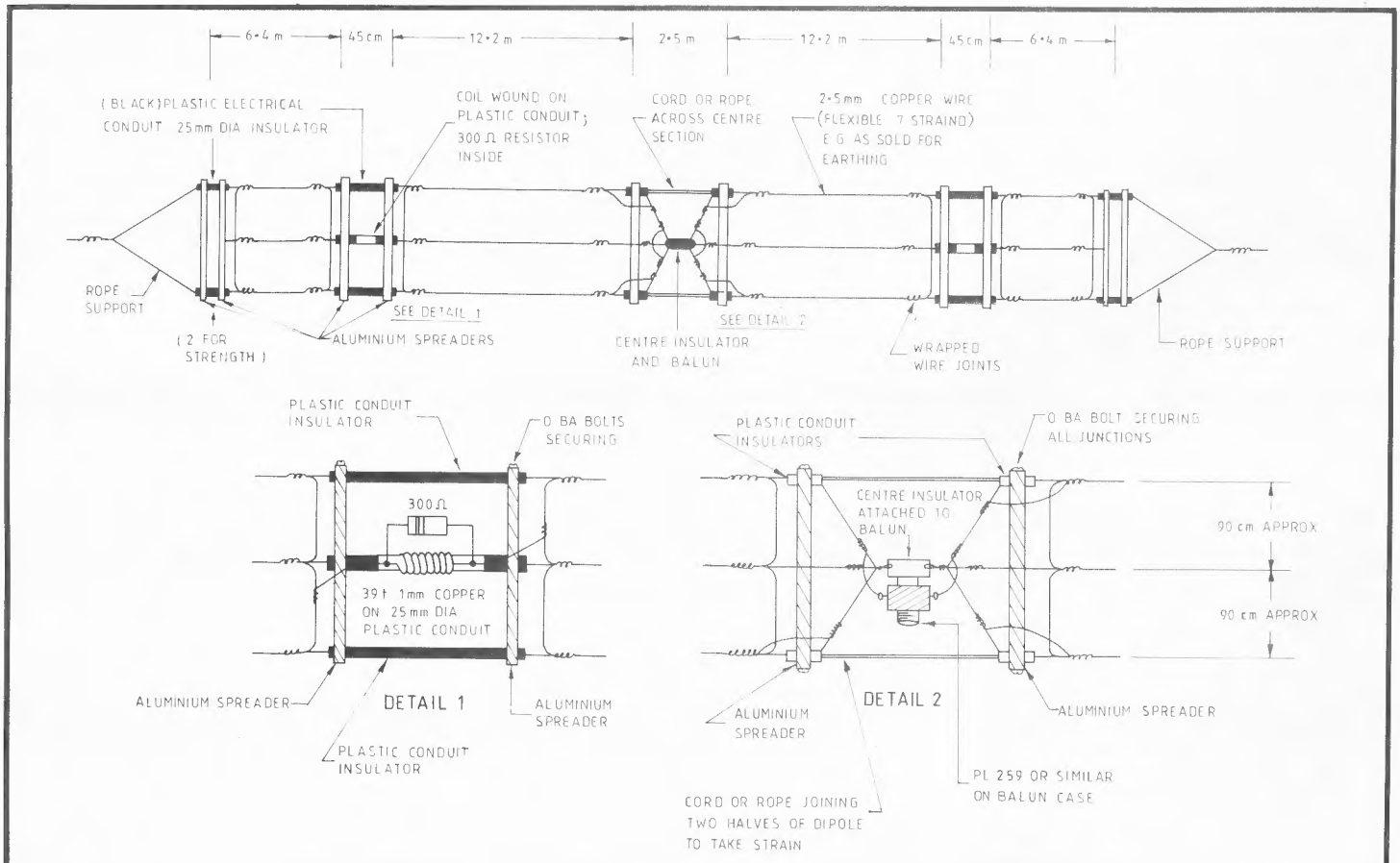
"A dipole can be modified by inserting resistive loading networks so as to produce standing waves between the feedpoint and the networks. The authors have, by adjustment of the networks and the dipole sections, developed a travelling wave dipole whose VSWR is less than 2 : 1 from 3 to 15 MHz and does not exceed 2.6 to 1 from 2.3 to at least 30 MHz."

(A, B, C, D, E, F, G, H are 25 mm diameter aluminium tubes.)

". . . neither the value of the 330 ohm resistors nor that of the shunt inductors was very critical. The shunt inductor has a small effect on SWR at the lower frequency end. However, reduction of the resistance to 150 ohms caused the SWR to fluctuate considerably with frequency. The taper sections were required to reduce shunt capacity between the spreaders D and E. Reducing the length of this section produced an increase in SWR."

Elsewhere (the ARRL Antenna Handbook), the resistors are specified as 2-5 watts rating for up to 500 watts PEP. It is also recommended that the aerial should be erected at a height of at least 40 feet (13m).

Several versions of this aerial were constructed, with varying degrees of success. The principal problem was high VSWR in the 5 to 8 MHz region. In an attempt to experiment with the shunt inductance, ferrite rod was inserted into the conduit upon which the coil was wound. It was found to be possible to adjust for low SWR at various places between 3 and



LOW - COST BROADBAND TRAVELLING - WAVE DIPOLE (CONSTRUCTION DETAILS)

9 MHz, but clearly this would be a critical procedure in the field, and in any case, the problem was solved in a different way.

MODIFIED DESIGN

An additional wire was run down the centre of the "tramlines". This dramatically reduced the fluctuations in SWR, and virtually eliminated any critical adjustments. The height of the aerial seemed to have no effect upon its matching, although of course performance was changed slightly.

Details of the construction of the aerial are given in the attached diagram. A 5 : 2 matching transformer was wound on a standard 50 mm toroid as shown.

With the exception of the toroid, all materials were obtained locally. Approximately 100m of 7-strand, 2.5 mm overall diameter copper wire was used, as sold for earthing in domestic wiring installations. It was found convenient not to use the PVC insulated type, which simplified the wire-wrapping. Cheap, black plastic 25 mm electrical conduit was used as a coil former and to make the insulators. The aluminium spreaders were very simply made, using decorative aluminium strip approximately 25 mm wide and about 10 mm thick, formed as a half "U", and sold for fronting formica table-tops and the like! Ordinary O-BA bolts were used to hold the various strips and tubes together.

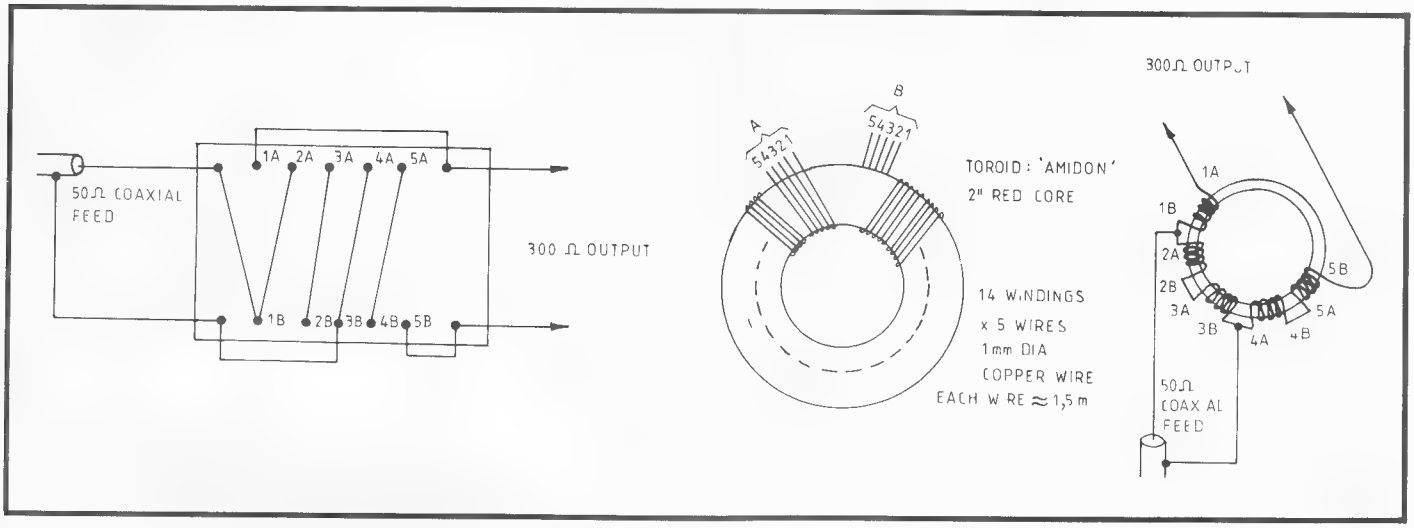
Because of past experience of ultra-violet damage to rope and plastics, some care was taken to select the appropriate materials. Black conduit was used because of its resistance to UV, and the aerial was suspended with ordinary fibre rope rather than nylon. However, it appears that fishing stores may also be a good source of ultra-violet resistant polyester or similar rope.

The performance of a typical, unadjusted aerial/transformer combination, with approximately 25m of 50 ohm coaxial feeder, is shown in the diagram. The aerial was suspended at about 40 feet.

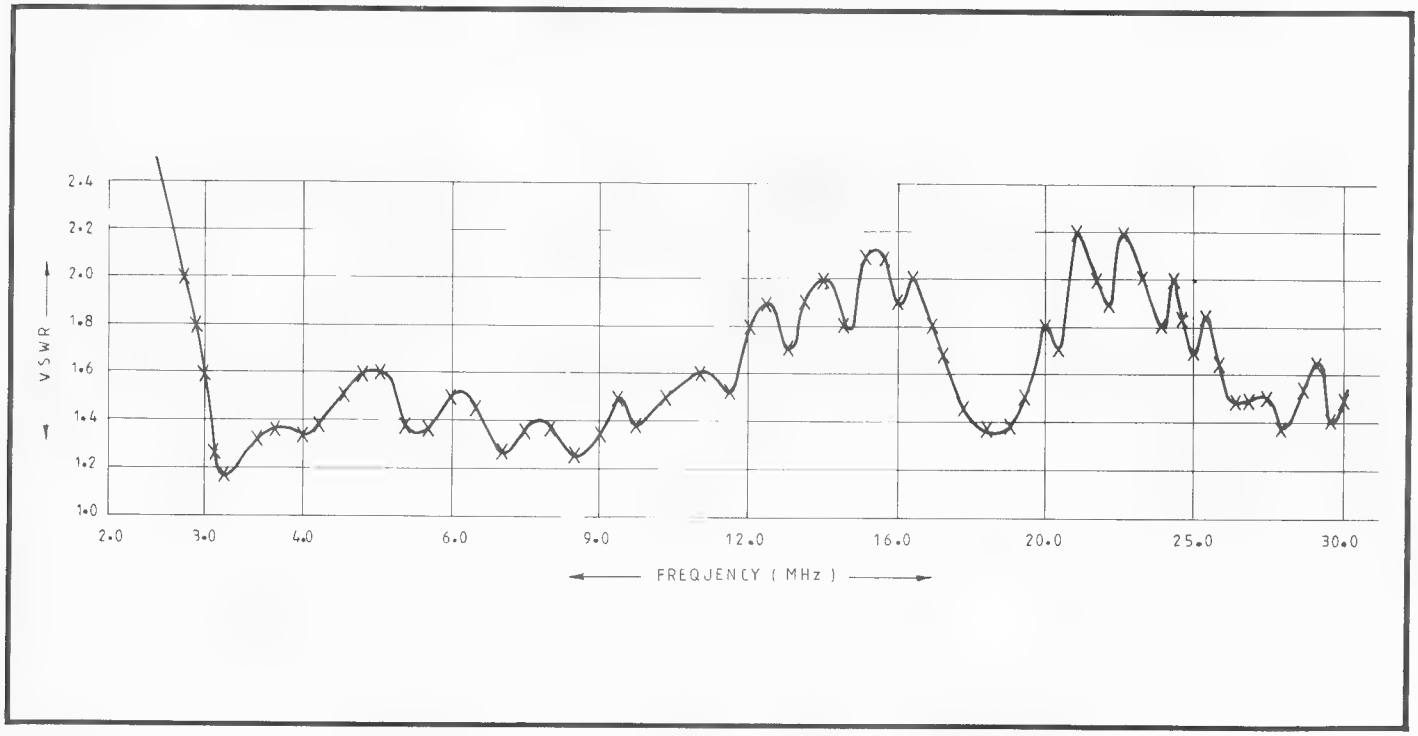
ACKNOWLEDGEMENTS AND REFERENCES

Based on a design by Dr. R. J. F. Guertler and G. E. Collyer, Antenna Engineering Australia (Pty.) Ltd.

1. "Report for the Government of the Republic of Botswana by the Consultant on Information and Broadcasting Services" — C. N. Lawrence, Commonwealth Fund for Technical Co-operation. December 1978.
2. TR-7 Service Manual; leaflet supplied with accessory filters.
3. "Amateur Radio" — Journal of the Wireless Institute of Australia, PO Box 150, Toorak, Victoria 3142, Australia. April 1974 edition.
4. ARRL Handbook.



Construction details of Transformer



Measured performance — wideband dipole VSWR against frequency

EQUIPMENT REVIEW

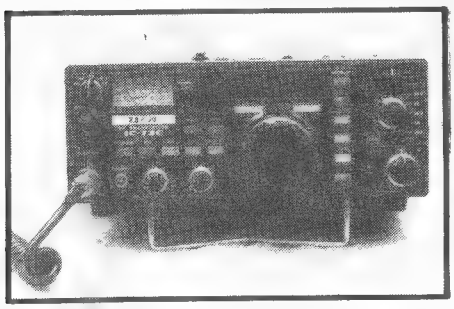
Ron Fisher VK3OM
3 Fairview Avenue, Glen Waverley 3150

A Review of the ICOM IC 730 Transceiver

With the proliferation of new transceivers on the market at the present time, it might be a surprise to many to know that the IC-730 is only the fourth HF transceiver that the ICOM Company have produced. Each of the four have broken new ground and have been quite distinct in the field. Let's look at each for a short time, it will perhaps give a picture of the design philosophy that went into ICOM's latest, the IC-730.

The first, the IC-700, was in three units. An amateur band receiver, a transmitter without VFO that slaved with the receiver and an AC power supply. Solid state design was used throughout with the exception of two 6146B finals for the transmitter. When one considers that this came on the market in 1968, it was perhaps somewhat ahead of its time. Many years were to go by before number two appeared, the first synthesized HF transceiver, the IC-701, again perhaps a little ahead of its time, certainly one of the more technically advanced transceivers of the time. The third, released almost two years ago, the IC-720 introduced an amateur band transceiver with full general coverage receive facilities and with the possibility of full coverage transceive.

And so we come to the IC-730. It goes without saying that we can expect features that will put it ahead of its rivals.

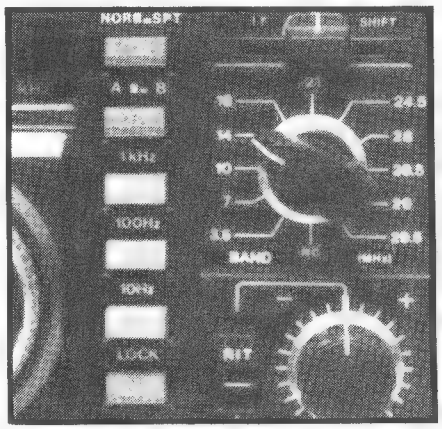


A CLOSER LOOK

Let's look at the 730 in detail and see just what it is and has to offer.

The 730 is a fully solid state HF transceiver with 100 watt output capability. It operates from an external 13.8 volt power source either your car battery or the optionally available ICOM IC PS15 AC power supply. It covers all HF bands including the new WARC bands but with the notable exception of 160 metres. Dimensions and weight are almost the same as its more obvious competitors, but what goes on under the covers is rather different.

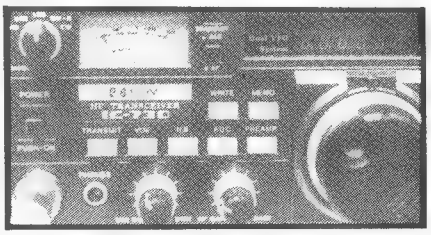
First off, the dimensions are 94 mm high, 241 mm wide and 275 mm deep. It weighs in at 6.4 Kg. The front panel is finished in smooth dark grey and the cabinet in the same colour but with a very fine rough texture. A very pleasing appearance. Each of the band positions covers just over 500 KHz with the ten metre band taking four segments. Reception and transmission is provided for the usual LSB, USB and CW, but in addition to these a wide selectivity AM mode is included.



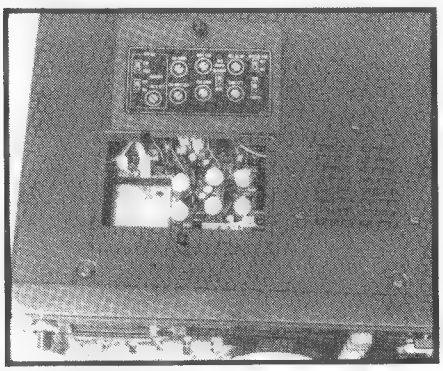
THE FRONT PANEL

As we might expect from ICOM, the tuning system is rather unique. Based on a CPU controlled synthesizer, three tuning rates 10 Hz, 100 Hz or 1 KHz are provided. In terms of tuning rate these work out at 1 KHz, 10 KHz and 100 KHz per tuning knob revolution, surely one to suit everyone. However, in addition to all of this, ICOM have incorporated two VFO's into the 730 to allow split frequency operation. Great, you say, but wait, the best is yet to come. For the first time in any of their HF transceivers, ICOM have included a memory system.

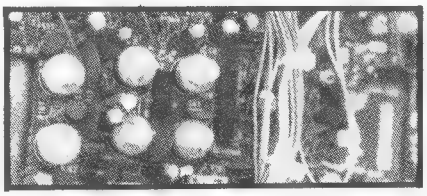
Enter your sked or net frequency on each of the several bands and there it is available any time at the push of a button.



Talking about buttons, most functions are push button operated. To mention only a few, VFO split, tuning rate, dial lock, RIT, MOX, VOX, noise blanker, AGC selection, preamp and the memory facility. An impressive total of fifteen buttons are logically laid out on the front panel but strangely only one LED status indicator is provided and this for the RIT.



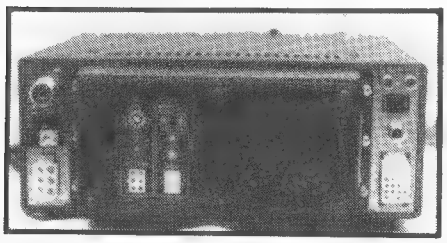
Several other controls are situated under a lift up lid in the top of the cabinet. These are the VOX controls, CW monitor level, SWR set, and switches for processor, SWR and noiseblanker width selection. Operation of some will later come in for some adverse comments.



Frequency readout is digital only. In common with the larger IC-720 no analogue dial scale is included. The digital display is both bright and legible and in common with all transceiver readouts these days reads to 100 Hz. In the selectivity department, the 730 comes with a 2.4 kHz filter installed for normal SSB operation and a 6 kHz filter for AM operation. If you happen to find entertainment value from the broadcast stations on 40 metres then this is for you.

OPTIONS

Several options are offered in the selectivity area. A narrow SSB crystal filter is offered to install in place of the normal mechanical SSB filter. We unfortunately have no data on the characteristics of the new filter, but it should be noted that there is no provision to switch this filter in or out. It has to actually replace the standard filter. A CW filter with a 600 Hz bandwidth can be installed in the transceiver and this is then switched in automatically by the mode selector. In addition an audio filter with 150 Hz band width is available. The transceiver comes with an IF shift and an optional additional filter is available to change the operation of this to a pass band tuning system. None of the optional filters were supplied with the review transceiver so I am unable to comment on their effectiveness. If a transceiver with them installed becomes available in the future they will be written up.



THE REAR PANEL

A cooling fan is built into the final amplifier compartment which operates as soon as the transceiver goes into the transmit mode.

Rear panel connections are a 24 pin accessory socket with outputs for 13.8 volts DC, T/R change over, fixed level receive audio output, plus various facilities for operation of the ICOM IC-2KL linear amplifier or VHF transverter. No matching plug is supplied. As well as this there is the antenna connector, a standard S0239, key jack, external speaker, ALC input from a linear amplifier, memory back up input which requires 12 volts DC to retain memory and dial calibration when the power is switched off, and finally the power input socket and ground terminal.

OPTIONAL POWER SUPPLY

Our review transceiver was supplied with the optional IC-PS15 power supply and, therefore, it seems opportune to include this in the review. It is designed to supply 13.8 volts DC fully regulated to a maximum output of 20 amps. Physical dimensions match the 720 but it is 16 mm taller than the 730. This can be matched up to some extent by using the tilt bale on the 730 but not on the power supply. Worth noting also is that the PS15 is compatable with the Kenwood TS-120/130 transceivers. Just plug them straight in. No auxiliary DC output terminals are included on the PS15 which is unfortunate, as it is for sure many owners would like to use it as a multi-purpose supply around the shack.

AC switching for the PS15 is taken care of in the transceiver which leads to the possibility of positioning the supply under the desk. The DC lead length on the PS15 is 800 mm.

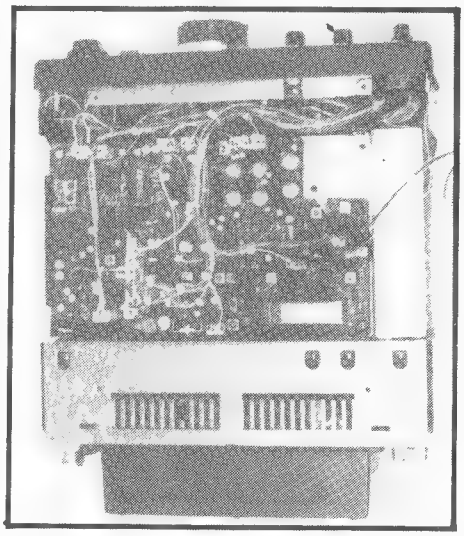


Photo showing top cover removed

THE IC-730 CIRCUIT

Let's now get a general idea of just how the 730 works. First the receiver. The input to the receive section uses the transmitter low pass filter system. The switchable 'Pre-amp' is, in fact, the receiver RF stage and uses a pair of FET's in push-pull. When switched out the signal goes straight into a second band pass filter network and then to the first mixer. First IF is 39.7315 MHz, then to 9.0115 MHz, then to 455 KHz. This is where the main IF shaping takes place with a mechanical filter for SSB, or the optional crystal filters for CW or narrow SSB. It then converts back to 9.0115 MHz and by using a VXO for the common hetrodyne oscillator up an down from 455 KHz, the VXO becomes the IF shift control.

The noise blanker has a switched time constant facility which ICOM claim is effective against the "Wood Pecker". In order to reject out of band signals and to provide immunity from overlead against strong adjacent signals, crystal filters are included in both the 39.7315 and 9.0115 MHz IF channels. After detection the audio signal is fed through active low pass filters to shape the response and remove unwanted high frequency components. On transmit, we will start at the microphone. The hand PTT microphone supplied contains a single transistor preamp. The microphone amplifier in the transceiver drives the balanced modulator which is also the product detector for the receiver. In the AM and CW modes this is unbalanced to give carrier output. The signal follows the same conversions as the receive signal and following the final mixer passes through two buffers, two drivers and finally the PA stage. Negative feedback is applied across the three final stages to give uniform gain across each band. It is also hoped that the feedback might also help to produce a low order of intermodulation distortion in the transmitted output.

The heart of the transceiver is the PLL unit and logic unit, and the heart of the logic section is a 4-bit CPU which has been programmed to control all tuning functions in the transceiver. The tuning knob operates a photo chopper which supplies the up/down information to the CPU. The CPU also supplies data for the digital display which is of the high intensity fluorescent type and not a LED display.

The PLL consists of a 13.66 MHz local oscillator multiplied by 9 and mixed with the 132 to 139 MHz output of the VCO. The resultant signal is divided down to 10 KHz and compared with a 10 KHz reference produced by dividing down from a 9 MHz crystal oscillator. The VCO is now divided by 10 and 13.2 to 13.9 signal in one KHz steps which goes to the pre-mixer where it is combined with an output of the CPU to provide the final hetrodyning signal to give the required transmit or receive frequency.

Comprehensive metering includes 'S' meter, ALC, RF out and SWR. The RF and SWR is monitored from a directional coupler in the output circuit.

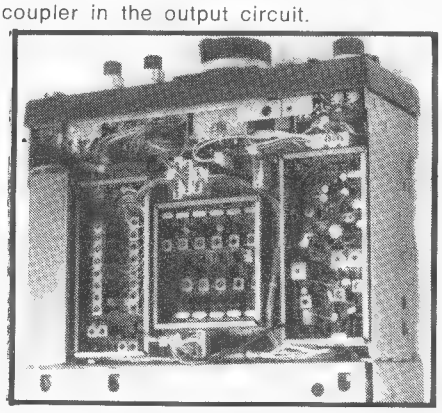


Photo showing bottom cover removed

THE IC-730 ON THE AIR

Plug it in, switch it on and so long as your antenna presents a 50 ohm load on the band you wish to operate, away you go. On initial switch on, the frequency will be 14.101.5 if LSB is selected or 14.098.5 if USB is chosen and the band switch set to 14. The same relative frequency will come up on other bands. With the three tuning rates available everyone should be happy, take your pick of fast, slow or extra slow tuning. I didn't think the tuning control felt as smooth as my old IC-211, but was nevertheless very pleasant to use. The drag on the tuning knob is adjustable by turning a spring loaded screw. With increased tension, however, the smoothness decreased and it produced quite a lumpy effect.

When changing sidebands or to AM or CW the frequency readout changes. In other words it is necessary to retune if you require the same frequency on the opposite sideband. It's perhaps surprising that the CPU isn't programmed to eliminate frequency change with change of mode.

After looking at the 730 brochure several months ago, I was intrigued with the preamp button. Would it bring up those 10 metre signals that are down in the noise. NO! it won't — in fact, with it in, the gain and sensitivity sound normal, with it out the set sounds dead. At the same time, I was surprised at the low overall gain and resultant audio output. Under noisy mobile conditions only strong signals would overcome the ambient noise. Even under quiet domestic conditions I found I was running the audio gain at about the half on mark with not a lot to spare.

Audio quality on receive is quite reasonable on the internal speaker and very good indeed on an external speaker. AGC action is very smooth with the slow decay on for SSB and the fast decay coped well with CW and AM signals. ICOM claim that the noise blanker is effective on the "Wood Pecker". I regret that try as I may I could find no detectable difference with the blanker on or off. Its action was good on ignition noise and when the 'wide' position was selected quite good on general electrical hash but with some chopping of the signal and a tendency to produce cross modulation.

The IF shift proved effective in action. Like others of the same type it proved capable of rejecting interference about 1.5 KHz off frequency. Of course, the actual band width does not change so there is always a chance that it might bring in as much interference at one end as it eliminates at the other. In this regard, I would like to try the optional FL-30 filter which changes the IF shift into a band width control..

AM reception is excellent — what a pity the 730 doesn't cover 160.

Transmitter power output was checked on all bands firstly in the CW mode. Exactly 100 watts on 80 tapering down to 75 watts on the high end of 10 metres. PEP output was almost the same and the pattern on the scope looked very clean. Power output is variable from maximum down to about 10W with the RF power control. An internal switch allows 50 to 100 watt operation — ideal for novices. However, there is no mention of this switch in the instruction manual. To access it, remove the top half of the cabinet and you will find it near the ICOM symbol about 3 cm right of the VOX delay control. During the power output tests it was noted that the SWR reading on the 730 meter showed 1.5 to 1 on a 50 ohm load. An internal adjustment can compensate for this but watch out. AM output was checked on air and the report indicated that quality was reasonable with slight distortion when peaking at 100% modulation. The AM is, incidentally, double sideband.

The speech processor gave the transmit audio a worthwhile lift. It should be noted that the processor is a fairly simple audio type and not an RF clipper. Transmit audio gain appeared a bit on the low side. Under no conditions could the ALC be pushed beyond the end of the scale segment. In fact, it appears that the ALC meter segment is too long, and best audio quality reports occurred when talking it up to about the half way mark.

The transmit tests occured on a day of 30 degree C and while the transmitter heat sink became quite hot to touch, the PS-15 heat sink was too hot to touch. I see that ICOM have a cooling fan available for the PS-15 as an option. Depending on your average temperature it might be a worthwhile purchase.

VOX operation was smooth, the only disturbing factor is the final cooling fan that stops and starts as the transceiver cycles back and forth from transmit to receive. While transmitting, the fan produces a clearly audible but not distracting sound.

CRITICISM

Now to the complaints department. ICOM's idea of putting the lesser used controls under a hatch in the top of the cabinet is a good one. But please make them accessible. The three slide switches used here must surely be the smallest ever made. To add to the difficulty, there is just not enough space to get your finger into the speech processor and SWR switches between the side of the hatch and the two nearby rotary controls. There must be a better way to do this.

Another slight problem arises when you add a linear amplifier that requires an earth on the control line to switch it. ICOM provide for this, but you have the option of linear switching or memory back-up — not both. A slight re-arrangement of the rear panel connectors would overcome the problem to provide one extra connector.

SOME THOUGHTS

Let me say right away that the 730 is a delightful little transceiver and offers facilities just not available in any other rig in this price range.

However, I feel that a few things could be improved with little or no increase in price.

Firstly, perhaps the hatch in the top of the cabinet could be enlarged slightly to give better access to the controls inside. Perhaps the switches for noise blanker, speech processor and SWR selection could be made a little bigger and more accessible.

A few more status indicators would be helpful. A pair of LED's to indicate which VFO is in operation and, perhaps, another to indicate memory condition.

All small points that would make an excellent transceiver superb. I look forward to seeing the IC-730A. I hope, too, that ICOM might bring out a line of matching accessories. I mean this in the sense of physical dimension matching. All the accessories such as the power supply and external speaker were designed primarily for the larger IC-720. I have no complaint with the electrical compatability.

INSTRUCTION BOOK

The IC-730 instruction book is well written and very complete, certainly from an operating point of view. Four pages of circuit description with section block diagrams gives a basic idea of set operation. You will need to read up the operations section, particularly with regard to the operation of the two VFO's and the memory system.

A full schematic diagram plus a large sheet showing all printed circuit board layouts.

No service or alignment information is published with the exception of operational fault finding.

VICOM tell me that no service manuals are available at the time of writing, but that they are expecting copies from Japan shortly. Price at this time is not known. It seems that ICOM service manuals have never been easily obtainable; I have yet to see one for any model.

Nevertheless, VICOM are set up with the most sophisticated service workshop in Australia and your new ICOM transceiver carries a 12 month guarantee.

Our review transceiver was loaned by VICOM INTERNATIONAL, City Road, South Melbourne, to whom all enquiries should be directed. ■

Mt. Gambier Convention

The South East Radio Group Inc. in Mt. Gambier will be holding its 18th Annual Convention on the Queen's Birthday long weekend on June 12-13-14.

In an effort to generate additional interest in this already very popular Convention new events have been planned for both amateurs and their families extending over Saturday and Sunday of the weekend.

Usual events such as fox hunts, hidden transmitter hunts and scrambles will be held, plus several beam heading competitions and a feature night fox hunt. For those without DF equipment an observation sightseeing trial is planned for Saturday afternoon. Excellent prizes will be awarded in all events.

Last year's Convention was very well attended by trade exhibitors and this year plenty of trade space will be available with excellent security for the exhibits during the Convention.

One of the main features of past conventions has been the excellent catering arrangements by the ladies' committee, and this area will again be treated with the priority it deserves.

Convention registration forms will be available from most VK3 and VK5 clubs or may be obtained by sending an S.A.E. to The Registrar, SERG, PO Box 1103, Mt. Gambier 5290. Any enquiries can be made by checking into the SERG net on Monday nights at 10.00 UTC on 3.585 MHz. ■

The Melbourne Skyline has changed recently!!

John Weir VK3ZRV
221 St. Helena Road, Greensborough 3088

From this statement you may say "So what?", but to a group of VHF, UHF enthusiasts it means a lot. Gary VK3ZHP started out building a cover for his backyard swimming pool (so I am led to believe) when all of a sudden, much to the astonishment of family and neighbours, a 12 foot (3.66 metre) diameter dish appeared above his garage sporting twin feeds for 432 MHz and 1296 MHz and an F/d 0.6.

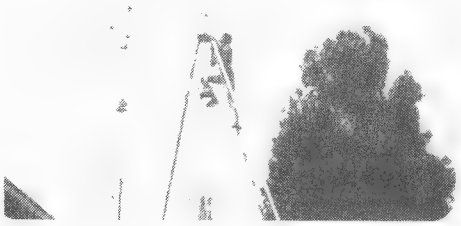
Gary has big things in mind for the dish, especially toward the west and particularly in the direction of Chris VK5MC and Col VK5DK. For the newcomer, Col is on 432.1 MHz just about every night at 10.30 UTC, but listen first on 144.1 MHz. Chris is usually around on Wednesday and Saturday nights at 10.00 UTC. Both normally have contacts with Les VK3ZBJ at the above times.

If you listen on 144.1, 432.1 or 1296.1 MHz you may hear quite a large number of stations, for example, VK3ACH, VK3ATY, VK3AWX, VK3BKF, VK3KAG (if you can drag him away from the fish tanks), VK3YRN, VK3ZMQ, VK3ZRV and VK3ZYN. They are usually moving up and down the bands on the above frequencies, looking for contacts both local and DX.

It is also noted that Ted VK3ZKP and Charlie VK3AUP have stacks of 4 modified W0EYE yagis under construction and, together with VK3SD, will appear on 432 SSB soon.

At present the group uses 147.05 FM for liaison until a repeater is unceremonially placed thereon and it becomes unusable. (Maybe this could be a good reason to have a liason frequency officially allocated for use by those interested in UHF communication both for local and DX liaison. "Food for thought???")

Anyway, enough of the general news, let's have a closer look at the "pool cover" (sorry dish) which Gary, together with some help from Bruce VK3AWX and Dave VK3YXE, put up on a recent weekend. The dish, as well as being 12 feet in diameter, is an eight spoke affair some 35 feet above the ground. The twin feed is based on the well known skeleton slot/reflector arrangement, cut in half vertically and mounted on the vertical separating plate. This arrangement was then resonated with the help of Les VK3ZBJ. The calculated gain is 31.6 dB on 1296 and tests so far have shown that it performs to calculated figures. On 432 the calculated gain is 21.3 dB but to date this has to be proved, although it shows some 5 dB on a single 18 element yagi used at present on 432. However, much hard work and fine tuning are still being done.



The photographs show the construction of the dish against the skyline. Also, the 432 yagi, two 144 yagis, a 24 element loop yagi for 1296 and a 6 metre yagi can be seen.

The dish is covered with three-quarter by half inch mesh normally used by avid gardeners to support their climbing vines. The mesh is tied onto the framework by wire ties. "How many ties?" I enquired. "Too many," said Gary whilst trying to straighten his curled and knotted fingers.

Also shown is the mounting arrangement for the disk and per the courtesy of Jenny, Gary's XYL, the method used to raise the "pool cover", OOPS, sorry, Gary, I mean dish, to its present location.

Although not shown clearly the vertical support mast is guyed at the top, above and clear of the dish and Gary's neighbour John has been heard to mutter, "What a good idea, saves me passing the dish back to Gary each time the wind blows."

Congratulations Gary for the achievement and I do hope you reap the rewards of your endeavour.

The frequencies again for those interested are: 147.05 FM, 144.1 SSB, 432.1 SSB, 1296 SSB/FM most nights. You will surely find someone to talk to. ■

It's in the air!

FM RADIO STATION USES TANDY EQUIPMENT

A small N.S.W. country town has started up its own FM-Stereo radio station, using Tandy Hi-Fi equipment.

Condobolin, which is about 80 kilometres west of Parkes, has a population of 4,000.

Their nearest radio station is 85 km away, and the nearest TV transmitter more than 140 km distant. Reception is not the best, which explains why most homes there have their TV antennas mounted on 20-metre masts.

In August, 1981, the residents formed Condobolin Community Broadcasters to organise their own FM-Stereo radio station. And a test transmission permit was duly applied for in November, 1981.

Arthur Platt and Alan Press, owners of Condobolin Colourvision, the local Tandy dealership, combined their technological know-how with the Tandy products they handled and did their part.

A transmitter was borrowed and installed, and Arthur and Alan put together a home-brew studio with Tandy equipment, including two LAB-240 Turntables, a Disco Mixer and a 14-610 Tape Deck — all of them bearing the Realistic brand name.

Then this year, Condobolin's test radio station went on the air staffed by volunteers from 7 a.m. to 12 midnight every day from January 13 to 18.

Programme material consisted of local news bulletins and interviews and stereo music. Residents report good stereo reception from up to 90 kilometres away, although the transmitter was low power — just 10 watts. More reports are still coming in.

Arthur Platt says Condobolin Community Broadcasters are now approaching the Broadcast Tribunal for a permanent FM-radio broadcasting licence.

The group plans to finance the radio station with subscriptions from local business concerns, through selling copies of their own programme guide, and through donations. They also hope to involve the local High School; so much of the work can be handled by the students. ■

HELP WITH INTRUDER WATCHING

Great Circle Maps

Keith Vriens VK3AFI
204 Myers Street, Geelong 3220

It was after the completion of my self supporting tower, that investigations were initiated to procure or produce a reasonably large and easy to read indicator to show the beam direction. The first requirement was a great circle map centred on Geelong or Melbourne.

In case this would not be available, perhaps a Sydney based map might be acceptable. In the recent past some articles had appeared in various publications, and these were duly dug up out of large piles of magazines.

In general the articles did not indicate the suitability of these maps for locations other than their base location. Further investigation in navigation publications revealed some restrictions and the need for reliable cross reference data.

By this time a DICK SMITH map and a GFS map had been obtained and cross referenced with some startling results. Some relatively large differences were observed and after quite a lot of fruitless searching for suitable cross references, it was decided that calculating one's own would be the only answer. This was going to be a tedious job and it was decided to try and write a program for an available computer to do the job faster and be more accurate.

Several months later, with the computer turning out some reasonable answers, a similar program was found in a Hewlett Packard instruction manual. The computer and calculator answers to several identical problems were then compared and turned out to correspond very well.

Some reference lists were then produced by the computer, based on Melbourne and Sydney and correlated with respective maps. This once again produced the results expected, showing both maps to be quite correct for amateur purposes when used at the correct location.

The thought then arose that it would be nice if every amateur could do this, or at least produce a printed list (perhaps in alphabetical order) to use in the shack.

To achieve this it would only be necessary to publish the results of my investigations and the complete program in Amateur Radio.

It was then decided to put the program in such a format that it would most likely run in even the simpler home computers. Also by using the data read method of input as shown, it was possible to make any first mentioned location the base for this great circle map calculation. This would enable any amateur anywhere to produce his own great circle map based on the exact home location.

The program itself is not in the simplest form but was left in such a way that it is easy to change for other types of computers.

```
10 PRINT "THIS PROGRAM CALCULATES GREAT CIRCLE BEARINGS AND DISTA
20 PRINT "BETWEEN ANY TWO GIVEN LOCATIONS."
30 PRINT
40 PRINT "ALL LATITUDES AND LONGTITUDES ARE IN DECIMAL DEGREES"
45 PRINT
50 REM SOUTH LATITUDES ARE -VE DEGREES
55 PRINT
60 REM EAST LONGTITUDES ARE -VE DEGREES
65 PRINT
70 REM LOCATION A - LAT = A1, LONG = A2
75 PRINT
80 REM LOCATION B - LAT = B1, LONG = B2
90 T = 0
100 DIM A$(50), B$(50)
140 READ A$, A1, A2
150 A1 = (A1/360)*2*PI
160 A2 = (A2/360)*2*PI
170 READ B$, B1, B2
175 IF B$ = "END" GOTO 2000
180 B1 = (B1/360)*2*PI
190 B2 = (B2/360)*2*PI
270 A3 = (B2 - A2)
280 A4 = (SIN(A1)*SIN(B1)) + (COS(A1)*COS(B1)*COS(A3))
290 A5 = SQR(1 - (A4**2))
300 A6 = A5/A4
310 A7 = ATN(A6)
320 IF A6 < 0 GOTO 330 ELSE 340
330 A7 = PI + A7
340 D = (60 * 360 * A7)/(2*PI)
350 K = D * 1.853
360 S = D * 1.152
370 H1 = (SIN(B1) - (SIN(A1)*COS(A7)))/(SIN(A7)*COS(A1))
380 H2 = SQR(1-(H1**2))
390 H3 = H2/H1
400 H4 = ATN(H3)
410 IF H3 < 0 THEN 420 ELSE 430
420 H4 = PI + H4
430 H5 = H4 * 57.2958
440 IF SIN(A3) = 0 THEN 460 ELSE 450
450 IF SIN(A3) > 0 THEN 480
460 H = H5
470 GOTO 490
480 H = 360 - H5
490 IF T > 0 GOTO 530
500 PRINT "THE GREAT CIRCLE BEARING AND DISTANCE ARE AS FOLLOWS"
510 PRINT TAB(10); "FROM"; TAB(30); "TO"; TAB(50); "HEADING";
515 PRINT TAB(60);"DISTANCE"
520 PRINT TAB(50); "DEGREES"; TAB(60); "NT. MLS."; TAB(70); "KILO
525 PRINT
530 PRINT TAB(5); A$; TAB(30); B$; TAB(50); H; TAB(60); D; TAB(70
540 T = T + 1
550 GOTO 170
590 DATA "MELBOURNE", -37.82, -144.97
600 DATA "GEELONG", -38.13, -144.35
610 DATA "CAPE TOWN", -33.90, -18.37
640 DATA "TENERIFE", 28.33, 16.57
650 DATA "GIBRALTAR", 36.18, 5.37
660 DATA "PARIS", 48.82, -2.33
670 DATA "GLASGOW", 55.88, 4.25
680 DATA "REYKJAVIK", 64.17, 21.83
690 DATA "ANCHORAGE", 61.22, 149.88
700 DATA"LOS ANGELES", 34.33, 118.20
710 DATA "KINGSTON", 18.00, 76.80
720 DATA "TRINNIDAT", 10.50, 61.20
730 DATA "RIO DE JAN", -23.90, 43.25
740 DATA "RECIFE", -8.05, 34.90
750 DATA "PERTH", -31.93, -115.83
760 DATA "WELLINGTON", -41.30, -174.78
770 DATA "TOKYO", 35.75, -139.50
780 DATA "SAN FRANSISCO", 37.80, 122.40
790 DATA "AMSTERDAM", 52.37, -4.90
800 DATA "SYDNEY", -33.88, -151.22
810 DATA "DARWIN", -12.45, -130.83
820 DATA "ALICE SPRINGS", -23.7, -133.87
830 DATA "ADELAIDE", -34.93, -138.6
840 DATA "HOBART", -42.83, -147.25
1990 DATA "END", 0 ,0
2000 END
```

Program listing

To produce a printout with your own QTH as base location it is only necessary to introduce one data line, e.g. for Broken Hill proceed as follows:—

1. Find latitude and longitude; 31° 58′ S, 141° 27′ E.
2. Convert to decimal degrees, remembering also North and West are positive, South and East are negative; —31.97°, —141.45°.
3. Enter as follows; 580 DATA "BROKEN HILL", —31.97, —141.45.

This line will fit in the program before all other location data and will be read first. This will make it the base location.

To use the program for another base location simply remove line 580 and replace with new location data as before.

For very short distances some error will be evident. Do not use remote locations at exactly North, East, West or South from the base location, as this may give the computer the hiccups.

LIST OF FUNCTIONS REQUIRED

SQR	Square Root	$y = \sqrt{x}$
ATN	arctan	y = arctan x
PI	3.14159	a constant
SIN	sine	y = sin x
COS	cosine	y = cos x

These functions will be required in a program library but are usually available.

REFERENCES:
Admiralty Manual of Navigation HMSO
Navigation: A. G. Gardner

```
THIS PROGRAM CALCULATES GREAT CIRCLE BEARINGS AND DISTANCES
BETWEEN ANY TWO GIVEN LOCATIONS.

ALL LATITUDES AND LONGITUDES ARE IN DECIMAL DEGREES



THE GREAT CIRCLE BEARING AND DISTANCE ARE AS FOLLOWS
   FROM              TO              HEADING      DISTANCE
                                     DEGREES    NO. MILS.   KILOMETRES

GEELONG           CAPE TOWN          122.236      5531.8      10251
GEELONG           JEPERIE            243.998      9677.7      17933.7
GEELONG           GIBRALTAR          274.771      9353.7      17337.4
GEELONG           PARIS              30.1333      9043.2      16760.5
GEELONG           CHICAGO            320.584      9155.2      16968.
GEELONG           HONGKONG           34.887       5167.93     16978.9
GEELONG           ANCHORAGE          28.4116      6761.46     12528.8
GEELONG           LOS ANGELES        65.2471      6931.35     12844.9
GEELONG           LONDON             107.648      8331.96     15443.6
GEELONG           TRINIDAD           153.639      864 .67     16021.1
GEELONG           RIO DE JAN         172.161      7053.66     13070.4
GEELONG           PERTH              131.628      3026.89     14677.5
GEELONG           PERTH              276.254      1447.43     2674.63
GEELONG           WELLINGTON         107.394      1469.95     2612.61
GEELONG           TOKYO              355.907      4445.98     8239.13
GEELONG           SAN FRANCISCO      60.3046      6667.15     12723
GEELONG           AMSTERDAM          310.292      9913.51     18376
GEELONG           CAIRO              54.6574      8177.56     777.457
GEELONG           LONDON             351.261      1701.83     3153.17
GEELONG           ARCTIC OCEAN       325.215      1636.47     1867.16
GEELONG           AUCKLAND           301.968      3337.69     6224.44
GEELONG           HONGKONG           155.792      3111.454    577.129
```

Example of computer output print

Quad Modification

J. A. Taylor VK3AJT
45 The Esplanade, Drumcondra 3215

(This is an afterthought on "Developing the HF Beam", December 1981 AR.)

In recent high winds, up to 125 km.p.h., a fault showed up in the soldering of connecting lugs to the element wires.

This, it is thought, was caused by the heat over-softening the already soft copper.

An improved ending to this terminal of the element wire has been tested drastically and, though more complicated, overcomes the only known fault in the quad.

This is required on the six 20m endings to the terminal blocks. All the others showed no fault.

The photo shows the assembly of all parts, which is as follows:—

A larger lug — BURNDY HYLUG B16M8 — is used with a connecting sleeve — BURNDY HYDENT BS06 — soldered half into the lug. These were obtained from Lawrence and Hanson.

Firstly, the element wire is soldered into the lug and sleeve.

Next, over the element wire, and hard up to the BURNDY sleeve, a 6 in. length of ⅛ in. inside diameter plastic tube is glued to the wire.

Over all of this, and over BURNDY sleeve is fitted and glued a 3 in. length of ¼ in. inside diameter plastic tube.

Lastly, over the 3 in. length of outer plastic sleeve, and over the BURNDY metal sleeve, is fastened a ⅜ in. hose clamp.

All was then coated with fibreglass emulsion.

Sleeving was from Donald Don.

Hose clamps were from Repco.

Having now seen the quad flexing in the worst of winds, a small bumper-bar has been fitted to the lower end of the driven element, just in case that dropper could be forced either alongside or behind the steel mast. ■

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Capacity Meter featuring Auto Ranging

D. S. Hoefsloot PA0DSH
Translated by W. Beyer VK3BHW
Originally appeared in Electron

I don't know how your work bench looks after a day's experimenting, but in all probability it will be the same as mine and that is a great pile of wires, assorted resistors and capacitors that were tried in an experimental circuit.

One of the problems that usually crops up is to sort out the capacitors from which the value is erased, and therefore have become useless. Taking into account the price of electronic components these days, it seems a crime to relegate these expensive capacitors to the dustbin.

So in the following paragraphs you will find a description of my solution of keeping these expensive capacitors with the help of an autoranging capacitor-meter.

SPECIFICATIONS

The most interesting and novel part of this design is the autoranging feature, hence one shall look in vain for lots of switches to play with, only an analogue indicator, 7 LEDs for range indication, and last of all a solitary ON/OFF switch.

There are six ranges to measure values between 10 pF and 10 mF, the seventh LED is an over-range indicator, when the unknown capacitor is in excess of 10 mF.

CIRCUIT DESCRIPTION

Fig. 1 shows the complete circuit of the capacity meter. A quick glance at the circuit shows that I am turned on (and off) by a certain multivibrator, namely the 74123. The 74123's most important characteristic is that it will generate an output pulse of fixed duration independent of the time of the input pulse. The fixed duration of the output pulse depends on an externally connected R/C combination chosen by the designer. This chip is also called a one-shot as it will only respond with one output pulse when it is triggered.

In fact, the complete circuit acts as an oscillator whose frequency is determined by the externally connected Cx.

The R/C time of MV-7 is set by the fixed resistor of 4.7 k-ohm and the unknown Cx.

The 74123's 1 to 6 (looking from the top down) have an increasing R/C time, going up in multiples of 10 (set with the 50 k-ohm trimpots).

The negative transition of the output pulse from each 74123 is used as the clock pulse for each corresponding 7474 flip-flop.

To start with our explanation we assume that an input pulse triggers all the 74123's immediately all the flip-flops will be preset by the negative going flank of the Q output of MV-7. The six inputs of the 7430 NAND gate will in turn be set to a logical 1 by the Q outputs of the 7474's with the final result being that the NAND gate output goes low.

Thus the input line of the 74123's is now low again. However an output pulse is delivered from each one-shot with times corresponding to its particular R/C combination.

Let's now assume that the time constant of Cx/R7 is longer than MV-1 and 2, but smaller than MV-3 to MV-6. The return of

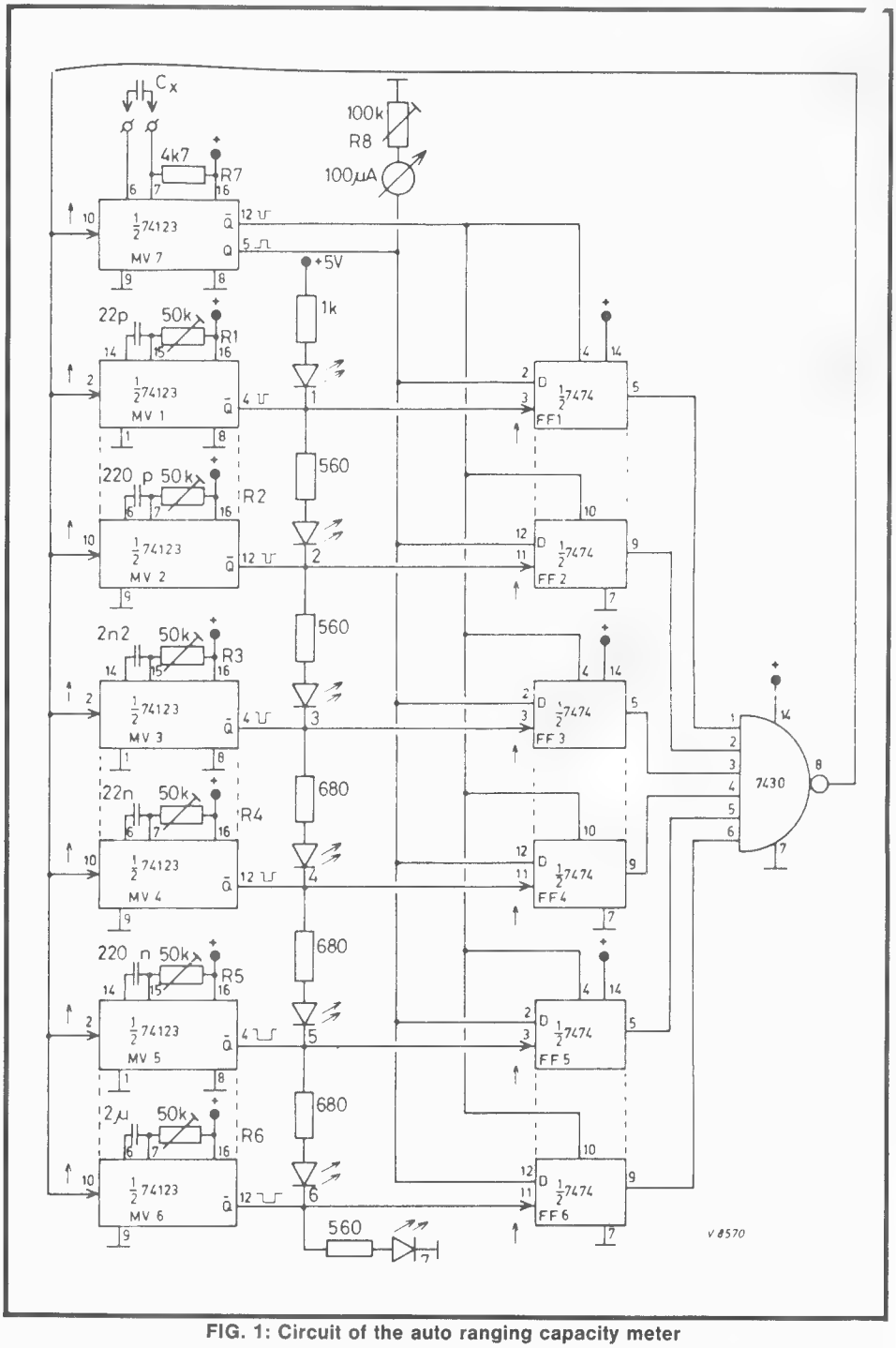


FIG. 1: Circuit of the auto ranging capacity meter

the outputs of MV-1 and 2 will not alter anything at the input side of the NAND gate for they are still pre-set by MV-7. However, when the Q output of MV-7 goes positive again the pre-set to the flip-flops is then removed. Still nothing happens, until MV-3 times out signalling the end of its time-pulse, this will clock the flip-flop and allow data to be transferred, thus setting input 3 of the NAND gate to a zero resulting in the output going high again. The inputs of the 74123's are high. Therefore each one-shot starts a new output pulse, the overall frequency depending on the value of Cx.

The one-shots 4 to 6 are simply forced into a new timing cycle and play no part in this particular sequence.

The timing diagram of Fig. 2 should help to explain the sequence of the above matters a bit further.

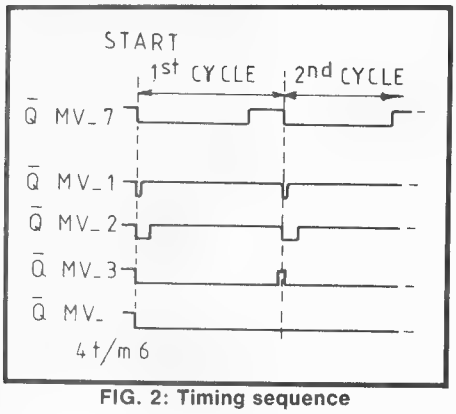


FIG. 2: Timing sequence

To go over it again in brief, the Q output of MV-7 delivers a pulse controlling the oscillation of the circuit, depending on the value of Cx. The average value of this frequency drives the analogue meter as well as determining which of the flip-flops is going to transfer the data to initiate a new cycle.

FRONT PANEL

The range being measured is indicated by LEDs 1 through 6. The value measured and indicated on the meter is accordingly multiplied by x10pF, x 100pF, x1nF, x10nF, x100nF and by x1mF, depending on which LED is lit.

Whenever Cx is greater than 10 mF LED 7 will light up because the oscillator will fail to run. To start the oscillator again the unit should be switched off and on again providing that a proper Cx has been connected to the test terminals.

CALIBRATION

This is done in the following 12 steps.

1. Set all the trimpots to maximum position.
2. For Cx use a high tolerance 100 pF capacitor.
3. LED 1 should come on.
4. Adjust trimpot R8 till a reading is obtained of say 20 per cent on the scale.
5. Reduce R1 till LED 1 nearly extinguishes.
6. Bring the needle to 100 per cent scale with R8.
7. Do not touch R1 and R8 any more.
8. Connect a high tolerance 1 nF capacitor to the terminals.
9. LED 2 should light up.
10. Adjust the needle to 100 per cent scale with trimpot R2, and the LED should just stay on. It should not jump to LED 3.
11. Repeat steps 8 through 10 with good tolerance capacitors for each range, using the appropriate trimpots.

SOME REMARKS

(a) The meter could have one more range (for 100 mF), however I do not recommend this for the frequency will be very low so much so that the needle will follow the actual frequency. Also linearity problems start to come in at this low range.

(b) Addition of a lower range is not possible. Here we run into problems with parasitic capacitance as seen by the input wiring and connections.

(c) Building the meter is not critical. However keep the wiring as short as possible especially around the input connections and pins 6 and 7 of MV-7. Making a printed circuit board appears to be the ideal approach for the construction of this unit and a stabilised power supply made with a 7805 is also recommended. Decouple each IC package with a 10 nF capacitor between Vcc and ground.

I've used the meter many times and it leaves no doubts reading the proper value of Cx (which is a problem with some commercial units) and I really think the cost of this project is not going to damage your bank account too much. ■

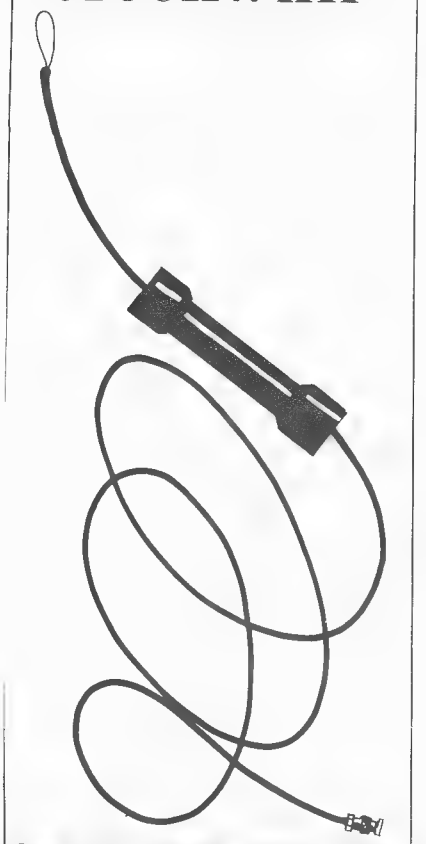
INTRUDER WATCH

Our amateur bands continue to be plagued by regular intruders. Your enjoyment of our hobby is slowly being strangled by them. Take careful note that IW observing is your chance to assist with the administration of our hobby. If you are not on your Divisional Council, not an office-bearer of your radio club, or not otherwise actively involved, WE NEED YOU.

IW particularly needs you to listen and report on the activities of UMS on 21032 and CQ5 on 21115 kHz. Please refer especially to your February 1982 AR IW column for further action requested.

If you don't have the address of your Division IW Co-ordinator, send your report to me — Bob McKernan VK4LG, Federal IW Co-ordinator, Box 50, Sandgate, Qld. 4017. ■

2 METRE "STOCKWHIP"



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A Three Band Vertical (10, 15 and 20 Metres)

Article by PA3AFZ
Published in CQ-PA Magazine
Summary by VK4QA

REPRODUCIBILITY

It is not unusual to find exciting designs for "you beaut" antennas in various amateur magazines, only to find that when YOU reproduce the design exactly as is, any similarity between theory and practice is purely coincidental.

The original design concept of this antenna-to-be-described comes from W6HPH. However, there were so many problems and, believe it or not, PA3ASR and PA3AFZ have solved them all and it is now possible to copy this design and be assured that it will work. Perhaps some minor adjustments could be necessary, such as final height, angle of radials, etc.

In a short space of time, six antennas were built based on this design and the results were fantastic.

TOPLOADING

Toploading is used because both theory and practical experience indicate that a quarter wave antenna radiates at maximum where the current is highest. (This in case you've forgotten your theory after passing your exam!!!!) However, some extra capacity is required to compensate for the losses incurred by the rather large coils. A low Q is not exactly what we want.

CONSTRUCTION

Fig. 2 shows the construction of the antenna (dimensions in mm). The radiator consists of two aluminium pipes sliding into each other for fine adjustment of the final optimum length. A hose clamp is used to secure the two pipes.

And now the horizontal part of the antenna. This part is made out of a weatherproof piece of PVC rod or tube with a diameter of 22 mm and a total length of 305 mm. It is essential that the diameter is exactly 22 mm, otherwise you'll have to do unnecessary experimenting with the coils to achieve the same results as the original design. Do exactly as "told" for once and get the antenna working. After that, go for your life with modifications.

1 mm diameter enamelled copper wire is used and the coils are close wound. The 15 metre coil uses 1960 mm of wire (1.96 metres) and for the 20 metre coil, measure off a length of 4330 mm (4.33 metres). Again, for the best results, KEEP TO THESE DIMENSIONS. Both coils are to be connected to the radiator on one side and on the other side to the capacitive "hats".

For 10 metres no coil is required, as the radiator should have an electrical length of a quarter wave for 10.

Attachment of the coil section to the radiator is left to the imagination of the constructor (at last, you're on your own here).

It is recommended to wind the coils in such a manner so that they can be moved along the former for fine adjustment. An explanation is not given, but it does influence fine tuning to a large extent.

For each band one radial is sufficient. More radials will improve all round performance unless you prefer a directional type of antenna. It has been found that one radial will show a directional pattern whereas more radials will show a more or less omni-directional pattern. Whatever number of radials you'll be using, one per band will get you perfectly on the air (after tuning). The length of each radial is dependent on the angle to the radiator and on the surroundings. It is recommended to make the radials slightly longer than a quarter wave for the band to be covered.

TUNING

First adjust the length of the radials to achieve the best possible SWR on each band.

Second adjust the length of the "bottom" half of the radiator (the part below the coils) until the antenna resonates on 15 metres.

Third adjust the top-capacity by adjusting the 20 metre coil until the desired resonance is achieved.

Fourth adjust the length of the top part of the radiator until 10 metre resonance is shown.

These adjustments should be repeated a number times to achieve maximum tuning. Then, if so required, readjust the radials for length and angle to get the best possible SWR. Experience has shown that the radials ultimately will be slightly shorter than the electrical quarter wave for each band.

All the tuning can be done at GROUND LEVEL. Again, experience has shown that when the antenna is finally raised to the desired height, very minimal, if any, adjustments are required to the radials.

Of course it goes without saying that the construction of this antenna should be weather, water and wind proof.

SWR

Test measurements on SWR for the three bands indicate a surprisingly wide bandwidth for 15 and 10 metres. Other copied antennas showed the same picture and some samples even showed a far better bandwidth for 20 metres than the one shown in Fig. 3.

So when you have made this PA3AFZ vertical and got it working first go then it is time to start experimenting, such as broadening the 20 metre bandwidth by using either a large diameter coil or winding the coil spaced.

And what about altering the height and make it a 15 or 20 metre quarter wave when "bare" and put the coils in for 40 and 80 metres. (Hey, why leave top-band out??) Any results on experiments, please drop a note to John VK4QA QTHR who will forward the information to PA3AFZ. ■

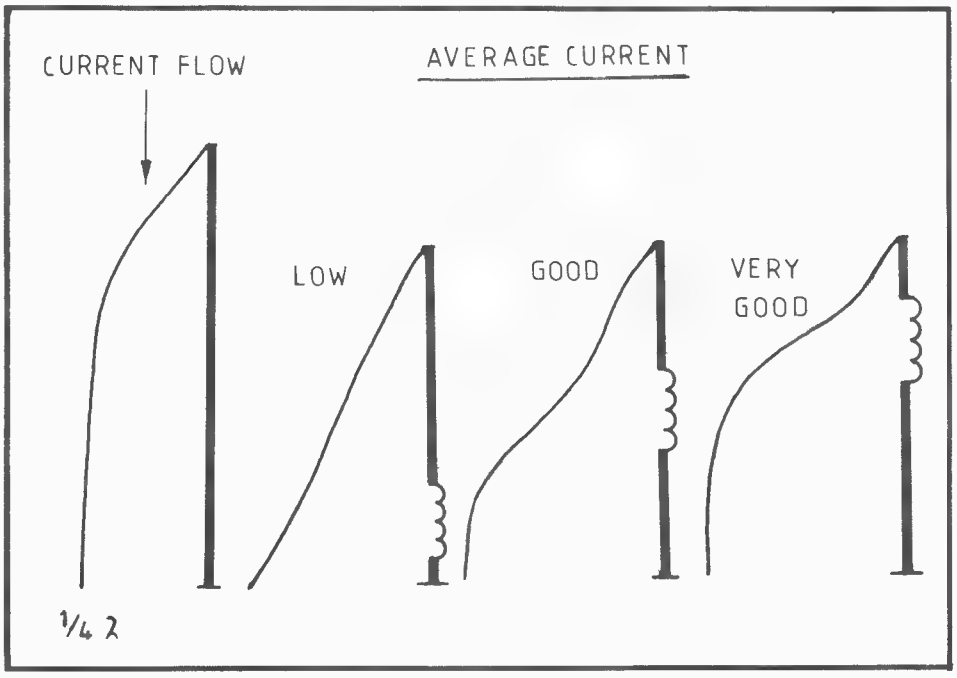

FIGURE 1

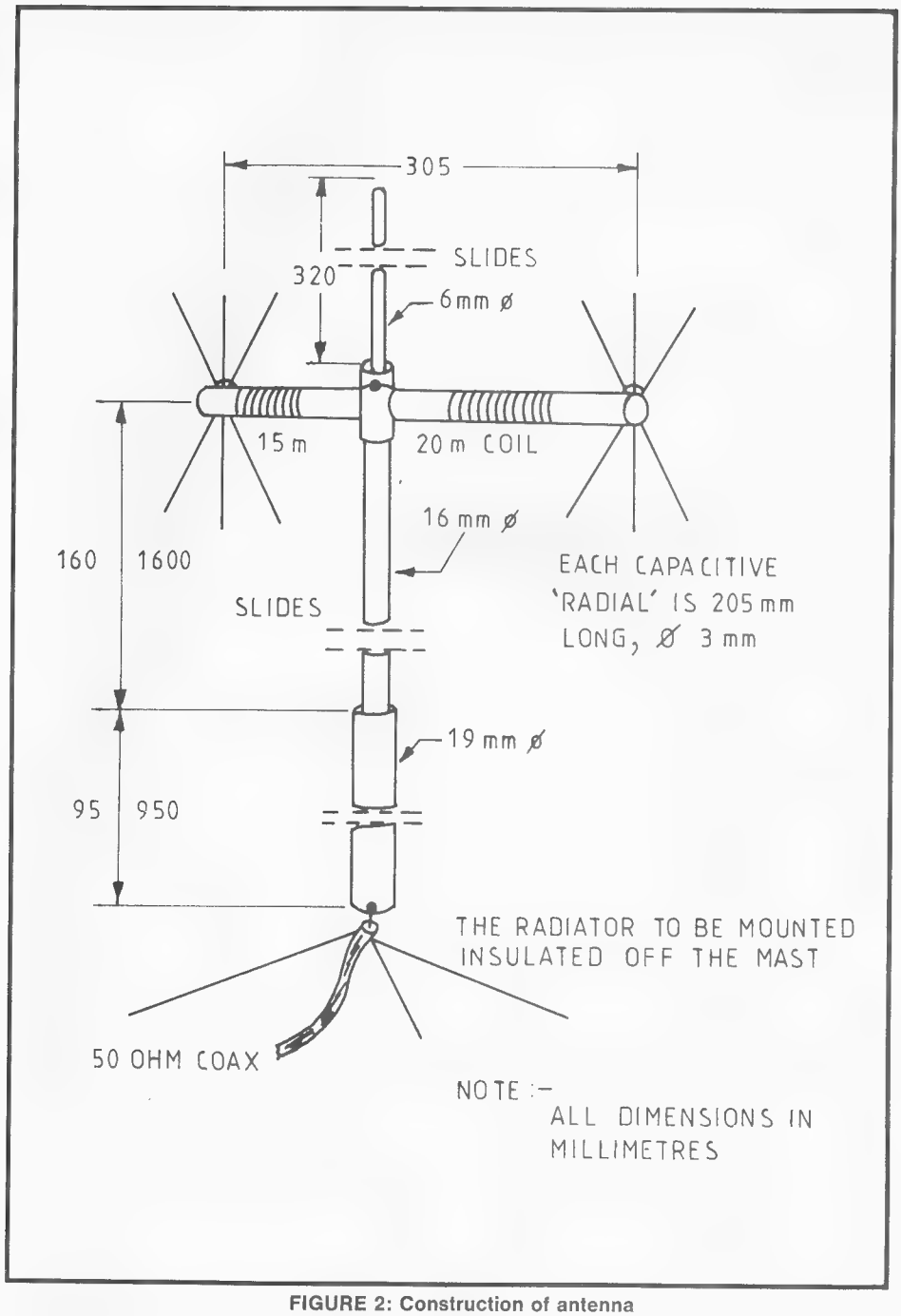

FIGURE 2: Construction of antenna

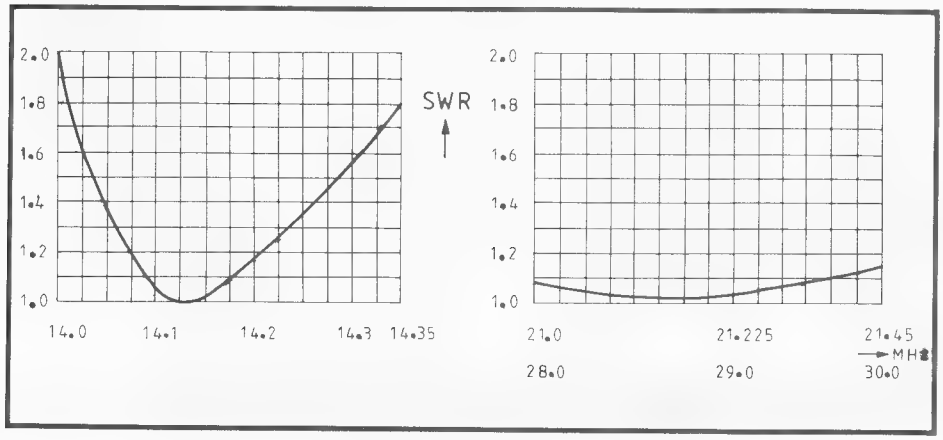

FIGURE 3: SWR frequency

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Moomba — VK5GAS

Little is known about the resources of the Cooper Basin and the small self contained township of Moomba which is company owned and is instrumental in supplying natural gas to Sydney and Adelaide, and boasts the amateur radio station with the appropriate call sign of VK5GAS.

MOOMBA, located in the Strzelecki desert just south-west of Innamincka, some 1000 km north of Adelaide and 1300 km west of Brisbane, was established in 1968 as a Gas Treatment Plant which would treat natural gas from the Cooper Basin, after which it would be transported by pipeline to Sydney and Adelaide. This gas field supplies more than 99% of natural gas consumed in N.S.W. and 100% of South Australia's gas requirements, also some 74% of the electricity generated in that state is produced with natural gas piped from this remote location.

The natural gas is drawn from reservoirs which lay between a mile and two miles beneath the surface and is the product of animal and vegetable matter deposited some 250 million years ago.

Currently gas is being recovered from more than 80 wells in five fields located up to 30 miles from Moomba. Each field has a partially attended satellite station to which gas is brought from the various wells by a gathering system of many hundreds of miles of pipeline.

Future development and continuity of the venture is assured and test drillings are being continuously carried out in locations hundreds of miles from Moomba. Transport of equipment is done by road whilst personnel and supplies are taken care of by the "Rig Hopper", a small aeroplane.

The actual treatment plant has an expected life of twenty years, however Moomba has become home, whilst working, to an all male community of approximately 200, of which 120 are on site at any one time, operating around the clock. The typical work cycle is 160 hours spread over 28 days, 18 are spent at Moomba and 10 on leave, generally in Adelaide. Travel to and from Adelaide is by the company owned Cessna Citation II Jet which accomplishes the distance in one and a half hours.

Conditions and amenities are good with individual air-conditioned rooms (to accommodate the temperatures as high as 46 degrees C in the shade), cafeteria, indoor pool, 200 seat theatre, sports complex and bar.

Some time during this period two forty feet long lengths of pipe took up a permanently vertical position on each end of the Squash Court — one mounted on the sphere from an unserviceable ball valve, for 'armstrong' rotation of the 10 metre band 3-element beam placed on top, and the other was topped off with a Citizen's Band 'Ringo' antenna.

THE RADIO CLUB

Early in 1979 two meetings were hold to ascertain if there was enough interest in Moomba for the formation of a Radio Club, only 12 of the "residents" showed any interest and 6 of these were interested in CB. A Club was formed and by mid-1979, management had provided a portable building for their sole use; the next six months were taken up by cleaning and decorating the interior, also the installation of an air-conditioner which would make operating more pleasant and also keep the dreaded sand out of the equipment.

November 2nd, 1979, Peter Blades and Mike Hawkins sat the Amateur Novice examination, as the result of which Mike went 'on air' early in 1980 with the call-sign VK5NHV. Peter and Buzz Shaw continued making CB contacts. Peter re-sat the Novice examination in May, 1980, but the theory still eluded him. (The Regulations and Morse sections of the examination were passed in November, and remained valid for one year, which left only the Theory section to pass.)

Up to August, 1980, Mike and Peter spent long hours studying, and Morse practice sessions were driving people mad in Moomba and at home. (It was also a Club recruiting drive based on 'if you can't beat them, join them'). Both entered the August Amateur Full Call examination with trepidation and continued to feel that way until the results brought on a period of numbness and disbelief — both had passed!

Then the activity reached fever pitch. A five band trapped long wire antenna was erected but only lasted for about six weeks — the local Corella population had increased from hundreds to thousands and their wire cutting beaks went into action. The long wire antenna crashed to the ground (smashing the traps), all the expensive RG8 coaxial cable to the beam and Ringo was shredded and the elements of the beam had that droopy look. It remains difficult to believe that each of these birds is worth about $400 to overseas collectors!

So we started again. A remote controlled antenna rotator was installed on it with the overhauled and realigned 10 meter beam on top. An inverted-vee antenna was also taken to the top of the tower, and a North-South long wire antenna was taken to a nearby water tower. (The birds should slide down the inverted vee antenna just as they do on the droopy radials of a ground plane antenna!). The equipment in the shack was also updated, the Yeasu FT-7 had a Yeasu FL-110 linear

Mike VK5AMH at the controls

added and the Yeasu FT-200 transceiver was completely re-valved and re-aligned. We were in business at last!

PRESENT

Although preliminary work on the formation of the Club started during February 1979, actual operating time (on air) was minimal until the last quarter of 1980.

Of the initial twelve interested people at those early 1979 meetings the Club has settled down to two Full Call Amateur operators plus about six regular visitors to the shack who have electronic hobby projects, though since news of the various radio contacts made has filtered out of the shack the numbers of visitors has increased considerably (or is it the coffee pot and easy chairs that draws them?). To make it more interesting for such visitors we have a world map mounted on the wall showing where we have made contacts, and another showing callsign prefix areas. The small collection of QSL cards that we have received are on display and their number will increase dramatically now that more time is being spent 'on air'.

The unusual area location of the Club, and the Company operation, has resulted in much interest from the people contacted. Most envy us for our work roster and are making a point of trying to keep track of our movements to maintain regular contacts. This interest has also resulted in the Club being included in the 'NutNet' which is a nightly exchange of banter between Amateur Radio stations in Australia and the Pacific Ocean islands. We also make regular contacts with operators in P29 (Papua New Guinea) and we are getting to know PNG very well.

Our Moomba location has also resulted in us having unusual skip conditions and being able to give some assistance to operators trying to establish contact, or having difficulty maintaining contact with other stations — it has been our pleasure to help, and the service will be continued.

The Club has designed, and has had printed, its own QSL cards which are of a very high standard and include an aerial photograph of the Moomba Gas Processing plant and facilities — all in full colour. All Australian, most PNG, and some of the other countries receive QSL cards direct, and a leaflet briefly describing the Moomba operation is enclosed. All other contacts receive the card only, through the QSL card bureau.

FUTURE PROJECTS

Included are improvements to our antenna system such as the purchase and installation of a 5-element, 15 metre beam, rigging up a Rhombie antenna orientated for Europe, and additional experimentation with the wire antenna.

Improvements to equipment includes the purchase of a full power (400 watts) linear for the transceivers.

Development of a 'MinNet', which will be a regular meeting 'on air' for Amateur radio operators living and working in mining communities with conditions similar to our own.

Instruction for any employee interested in obtaining the Novice, Limited, or Full Call Amateur licence (the Club has instruction books, text books and morse practice tapes).

Participation (subject to Company approval) in WICEN (Wireless Institute Civil Emergency Network).

Possible installation of equipment (HF & VHF) for a back-up system and alternative communications centre for the Company radio network, and for 'silent hours' monitoring of Emergency frequencies.

The Department of Communications kindly allocated the call sign VK5GAS on the understanding that it was temporary and could be recalled if it was necessary to use the suffix elsewhere.

Present members of the Club are Mike VK5AMH, Peter VK5APB, Nick VK5NIC/ZAT, Alex VK5ZEB, Buzz and Verne who are studying to pass the exams. The Moomba Amateur Radio Club also boasts an honorary member who is John VK5JM, President of the WIA, South Australian Division, who travels to and from the area on business and drops in for a short QSO from time to time either using the Club's call or his own/portable.

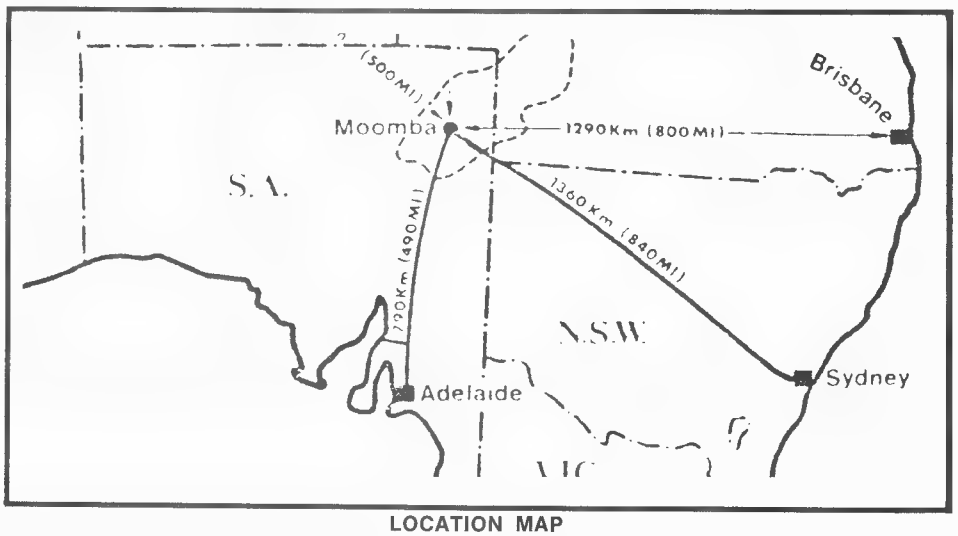
Present equipment at the Club rooms, which is divided into two separate shacks, comprises an FT200 with "home brew" antenna tuner and a FT707M. Both units being able to be fed to either of the beams on 10 and 15 metres or the inverted Vee on 80 metres, also they have a "long wire" which can, with the tuners, be used on 30 metres.

QSLs are 100% by the Bureau or direct to Box 121, North Adelaide, 5006, S.A.

ACKNOWLEDGEMENTS

Public Relations Department SANTOS. 183 Melbourne Street, North Adelaide, S.A., 5006.

Mike VK5AMH ■



LOCATION MAP
Showing natural gas pipe line and the Cooper Basin

System Loss and Antenna SWR — or How Much Power do you Radiate?

George Cranby VK3GI
Box 22, Woodend 3442

The graph, Fig. 1, tells the story and is the result of some calculations stimulated by a section of Ron Cook's (VK3AFW) "Novice Notes" in the November 1981 issue of "Amateur Radio".

The calculations are really very simple, if somewhat tedious. They are based on well known facts and formulae, and are expressed throughout in terms of unity input.

SWR is calculated by the formula (1 + reflected voltage)/(1 — reflected voltage); the reflected voltage is calculated as $\sqrt{\text{reflected power}}$. SWR meters are usually calibrated not only in SWR but also in reflected voltage, mostly in %. In this calculation the fraction is used, i.e., 0.6 instead of 60%.

Let us assume, for example, a rather poor feed system with, say, 10 dB feedline loss and a 4 : 1 antenna SWR. The following power flow then exists:

(1) Input to feedline is taken as unity (1.00).

(2) Power at end of feedline is 0.1, due to 10 dB line loss.

(3) The antenna reflection factor, for a 4 : 1 SWR, is 0.36. This is reduced to 0.036 by the feedline attenuation factor of 0.1. The reflected voltage factor is $\sqrt{0.36} = 0.6$.

(4) Reflected power at the transmitter end of the feedline is 0.0036, due to 10 dB line loss on the return path.

(5) Reflected voltage at the transmitter is $\sqrt{0.0036} = 0.06$.

(6) SWR at the transmitter is therefore $\frac{1.06}{0.94} = 1.13$.

It can be seen that the measured SWR of 1.13 : 1 hides a 4 : 1 SWR at the antenna!

This lengthy step-by-step calculation can be much simplified; the process, using reference numbers from the full calculation, is as follows:—

Reflected voltage at transmitter
$= \sqrt{(2) \times (3) \times (2)}$
$= \sqrt{(2)^2 \times \sqrt{(3)^2}}$
$= (2) \times \sqrt{(3)}$
= (line attenuation factor)
× (antenna reflected voltage factor)

In terms of our example this is 0.1 × 0.6 = 0.06, the same value as was obtained with the detail calculation.

Table 1 has been calculated by using the short formula for all combinations of line loss from 1 dB to 10 dB and SWRs from 1.2 : 1 to 4 : 1. The reflected voltages for antenna SWRs were taken from Table 1 of Ron's "Novice Notes" except for 2 : 1, which I calculated.

TABLE 1: System SWR.

Antenna SWR	VRF*	Line Loss, dB	1	2	3	5	10
		Line Attenuation Factor	0.794	0.631	0.501	0.316	0.100
1.2 : 1	0.1	Reflected Voltage at Txr	0.079	0.063	0.050	0.032	0.01
		System SWR	1.17:1	1.13:1	1.11:1	1.06:1	1.02:1
1.5 : 1	0.2	RVAT	0.159	0.126	0.100	0.060	0.020
		SWR	1.38:1	1.29:1	1.22:1	1.13:1	1.04:1
2 : 1	0.334	RVAT	0.265	0.211	0.167	0.106	0.030
		SWR	1.72:1	1.53:1	1.4:1	1.24:1	1.06:1
3 : 1	0.5	RVAT	0.400	0.320	0.250	0.160	0.050
		SWR	2.33:1	1.94:1	1.67:1	1.38:1	1.11:1
4 : 1	0.6	RVAT	0.476	0.379	0.300	0.190	0.060
		SWR	2.82:1	2.22:1	1.86:1	1.47:1	1.13:1

* VRF — Voltage reflection factor due to antenna SWR.

TABLE 2: Summary, Table 1

Table 2 is simply an easy-to-read summary of the results of Table 1.

Loss, dB / Ant. SWR	1	2	3	5	10
1.2:1	1.17:1	1.13:1	1.11:1	1.06:1	1.02:1
1.5:1	1.38:1	1.29:1	1.22:1	1.13:1	1.04:1
2:1	1.72:1	1.53:1	1.4:1	1.24:1	1.06:1
3:1	2.33:1	1.94:1	1.67:1	1.38:1	1.11:1
4:1	2.82:1	2.22:1	1.86:1	1.47:1	1.13:1

Table 3 is the result of power loss calculations. Power loss, in dB, is 10 log (P2/P1), where P1 is the input power and P2 the output power. In the case of an antenna, output power is the power accepted (radiated) by the antenna. This is, in unit terms, 1 — (factor of reflected power). Table 3 is mathematically very simple and gives, in the last column, the power loss in dB due to the antenna SWR.

TABLE 3: Antenna SWR Loss, dB.

Ant. SWR	Accepted Power	Loss, dB
1.2 : 1	0.99	0.04
1.5 : 1	0.96	0.18
2 : 1	0.889	0.51
3 : 1	0.75	1.25
4 : 1	0.64	1.94

Table 4 consists of the sums of all combinations of line losses plus antenna losses from Table 3.

TABLE 4: System Loss (Line and Antenna) dB.

Loss, dB / Ant. SWR	1	2	3	5	10
1.2 : 1	1.04	2.04	3.04	5.04	10.04
1.5 : 1	1.18	2.18	3.18	5.18	10.18
2 : 1	1.51	2.51	3.51	5.51	10.51
3 : 1	2.25	3.25	4.25	6.25	11.25
4 : 1	2.94	3.94	4.94	6.94	11.94

The graph was then constructed by using Tables 2 and 4. Each point was found by entering, from Table 4, the system loss for a certain line loss/antenna SWR combination, and the system SWR figure from Table 2 for the same line loss/antenna SWR combination. Typically, for a 3 : 1 antenna SWR and 5 dB line loss, we have a point defined by 1.38 : 1 system SWR and 6.25 dB system loss.

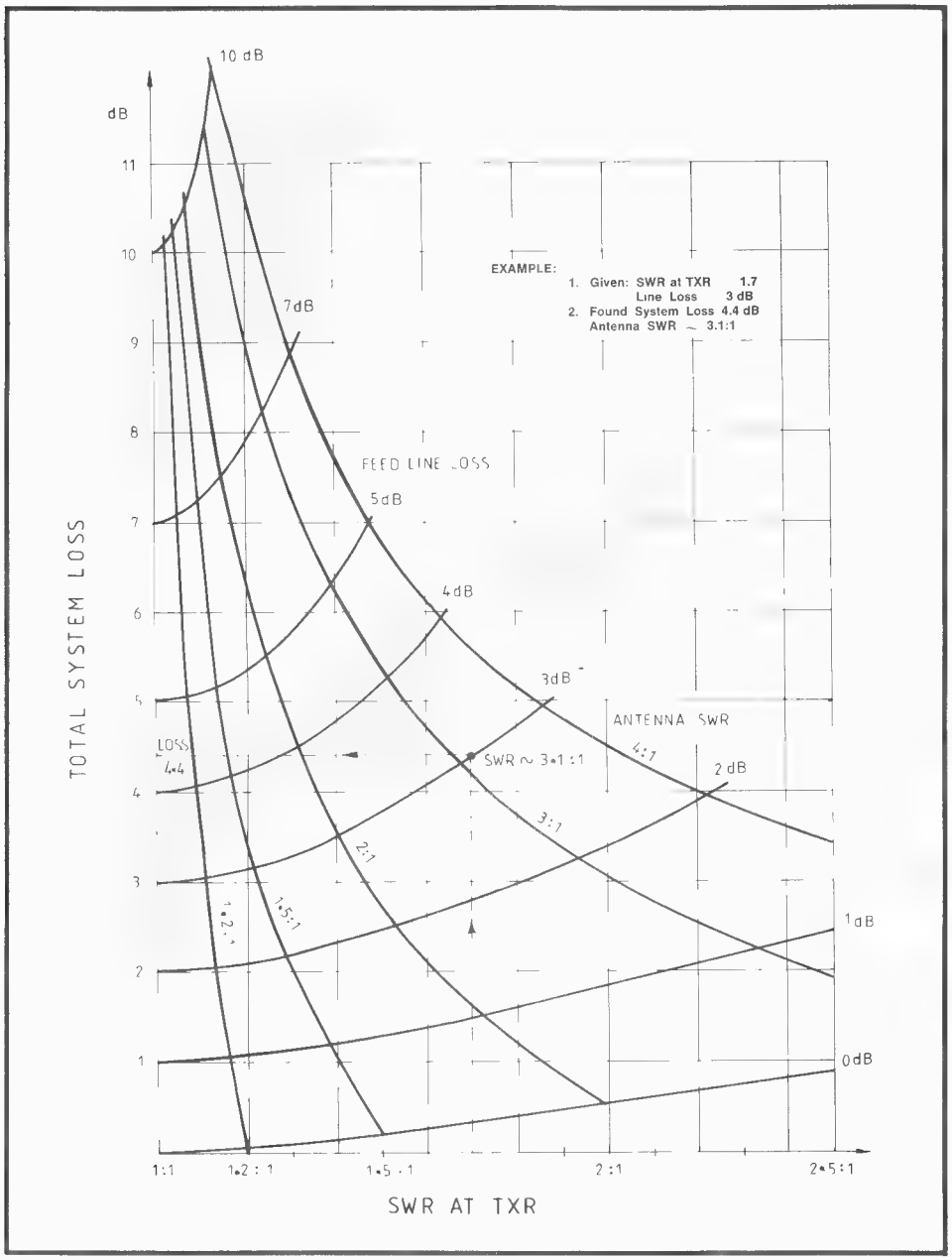


FIG. 1: System loss and antenna SWR chart

By entering all combinations, point by point, and then drawing the various connecting curves, the graph was established. The 0 dB line was constructed from Table 3.

Two parameters must be established to use the graph. One is the SWR measured at the output of the transmitter and the other is the coaxial or parallel feedline loss; this can be obtained with sufficient accuracy from the literature, or from another amateur with access to this information.

It is then possible to find the total system loss and the true antenna SWR. It became very clear from the calculations — as was mentioned in Ron's article — that a high feedline loss tends to disguise the true antenna SWR.

One can conclude from the graph that the system power loss is much more sensitive to line loss than to antenna SWR; one should therefore install feedlines with minimum loss. The antenna SWR, as long as it is kept below 2 : 1, will not materially affect system performance.

The example quoted on the graph shows quite clearly how it is used, and what information it can give.

I wonder how many amateurs are happily watching the SWR meter in the shack without realising that their 1.5 : 1 SWR, together with their 5 dB line loss, hides a 4 : 1 SWR at the antenna and that this antenna SWR causes an additional power loss of nearly 2 dB. Do they realise, I wonder, that their total system loss of close to 7 dB practically wipes out the nominal gain of their cherished 3-element yagi?

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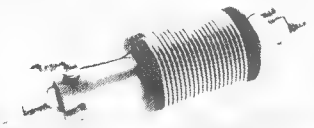
- **Thoroughly weatherized**

What does a trap do?
At resonance the trap is an "open circuit" and cuts your dipole to resonant length at that frequency.

Complete instructions are furnished.

Model	Resonant at
KW10	10 metres
KW15	15 metres
KW20	20 metres
KW40	40 metres



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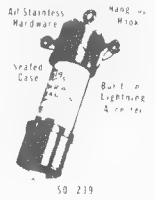

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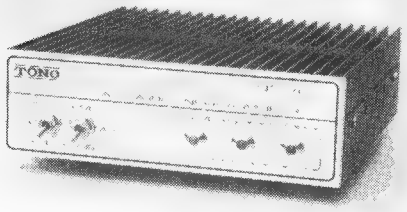
AR SHOWCASE

NEW LINEAR AMPLIFIERS

Authorised distributor for Tono products, Vicom International announce the release of a new range of solid state linear amplifiers for VHF and UHF.

Five models are available for 2m with power outputs up to 210W. One model is designed with the hand-held user in mind offering up to 45W output for 3W input. Most feature an inbuilt receiver pre-amp giving up to 13 dB of gain.

Two models are available for the 70 cm band with power outputs of 40W and 65W. The 65W model, the UC70, also features a high gain receive pre-amp.



Prices and full specifications may be obtained from Vicom International Pty. Ltd., 57 City Road, South Melbourne (03) 62 6931, or at 339 Pacific Highway, Crows Nest (02) 436 2766.

Pictured is the UC70 70 cm linear amplifier. ■

LOW COST 2 TO 2.7 GHz RECEIVING SYSTEM

GFS Electronic Imports of Mitcham, Victoria, have just announced the availability of a low cost 2 to 2.7 GHz down-converter system.

The System, known as System-20, consists of a 24 inch parabolic reflector, feed horn, mast head mounted down-converter, remote mounted power supply/tuning unit and associated mounting hardware as well as interconnecting coaxial cables.

Also available, as an option is a low noise, mast mounted RF amplifier, the Model 2001. It provides 20 dB gain with a 2.6 dB noise figure at 2.5 GHz.

The System-20's parabolic reflector and feed horn have a gain of 21 dBi and a beam width of 13 degrees at 2.5 GHz. This, coupled with RX-2300 down-converter's built-in low noise pre-amplifier, provides a high overall system gain. The pre-amplifier exhibits a 2.4 dB noise figure with the down-converter providing an overall conversion gain of 25 dB.

The System-20 is continuously tunable over a frequency range of 50 MHz from the power supply/tuning unit. This 50 MHz may be preset anywhere between 2 and 2.7 GHz.

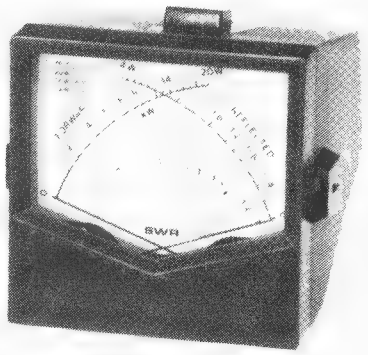
Because of its low cost the System-20 has applications in many areas, including the monitoring of Electronic News Gathering System (ENG), point to point links, weather satellite reception (with the 1.6 GHz version) as well as the 2.3 GHz amateur band.

Cost of the System-20 is a rather remarkable $399 plus sales tax, while the 2001 low noise amplifier is $199 plus sales tax.

For further information contact GFS Electronic Imports, 15 McKeon Road, Mitcham, Victoria 3132. Phone (03) 873 3939. Telex 38053 GFS. ■

NEW DAIWA PRODUCTS

Vicom International Pty. Ltd. the authorised distributor for Daiwa equipment in Australia and New Zealand announce the release of three new meters featuring the famous cross needle principle.



The CN630N is designed with the serious VHF/UHF enthusiast in mind, being identical to the very popular CN630 but fitted with low-loss type "N" connectors. Frequency range is 140-450 MHz and power ranges are 20 and 200W FSD.

The CN510 is a very compact unit covering 1.8-60 MHz with power ranges of 20 and 200W.

The CN540 is identical to the CN510 but covers 50-150 MHz. Both units are ideal for mobile use or for crowded shacks.

Further details may be obtained by contacting Vicom International Pty. Ltd., 57 City Road, South Melbourne (03) 62 6931, or 339 Pacific Highway, Crows Nest (02) 436 2766. ■

ROTATORS

Telex Communications Inc., Minneapolis, U.S.A., have announced the purchase of the Rotator Division of Correll Dubbier (C.D.C.). Production of this famous line of rotators has now commenced at the Lincoln factory for Hy-Gain products.

The product line includes the well known "Tail Twister" T2X, heavy duty rotator for arrays of up to 20 square feet.

Others in the line include the HAM IV which easily handles arrays of up to 15 sq. ft. or the CD4511 for up to 8.5 sq. ft. The lightweight ever reliable, economy AR2XL is a popular choice for lighter weight TV/FM and compact arrays 3 sq. ft.

Fur further information contact the Hy-Gain distributors:

AUDIO TELEX COMMUNICATIONS PTY. LTD.

SYDNEY:
P.O. Box 421, 1 Little Street,
PARRAMATTA, 2150
Phone: 633 4344

MELBOURNE:
P.O. Box 468, 7 Essex Road,
MT. WAVERLEY, 3149
Phone: 277 5311

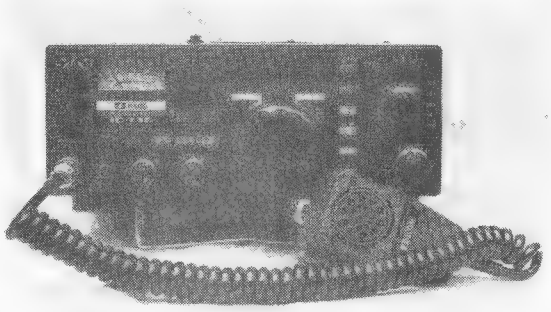
BRISBANE:
P.O. Box 871, 42 Commercial Road,
FORTITUDE VALLEY, 4006
Phone: 52 1312 ■

WANTED

Any good technical articles for publication in AR

CLIPPER CIRCUIT QUIZ

COMPETITION

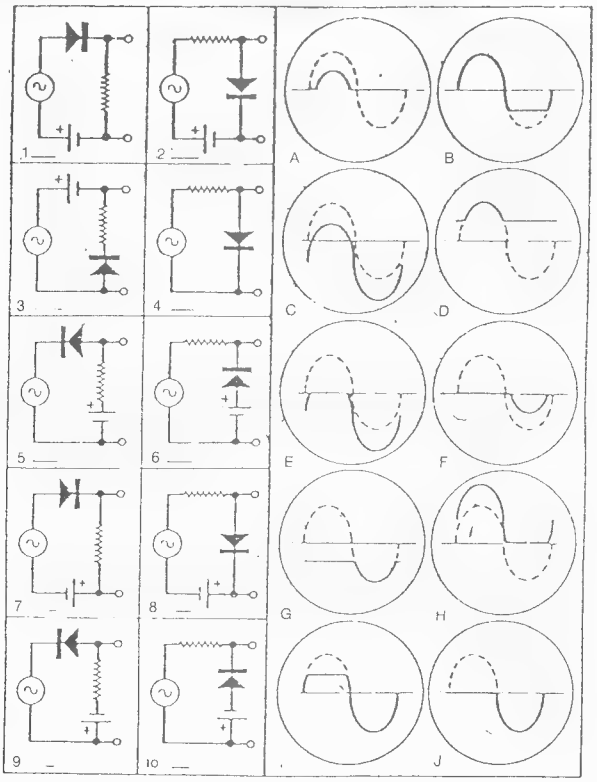


Vicom International Pty. Ltd. have donated a DAIWA CS401, 4 Position Co-axial Switch, valued at $69, which is to be presented to the winner of this competition. The winning entry will be the first neatest correct answer opened.

A simple circuit consisting of a diode, resistor and battery can be used as a clipper or limiter, or to shift the zero reference level of a waveform. Just what a particular arrangement will do is predictable if you observe the polarity of the net circuit voltage, diode biasing and each voltage drop.

See if you can match the output waveforms (A-J) with the circuits (1-10). In each case, the input is a sine wave with a peak voltage twice the cell's voltage. The resistor is large compared to the forward resistance of the diode yet small compared to its reverse resistance. The dotted lines represent the undistorted output waveform.

HINT: Assume as cell voltage of three volts and see what happens as the input sine wave goes to +6 and —6 volts in 1 volt steps.



RULES:

The contest is open to all financial members of the WIA, with the exception of all people and their immediate families, associated with the production of Amateur Radio. One entry per member, each entry to be handwritten.

Entries must be received no later than last mail, Monday 3rd May and the winning entry will be drawn by the Editor of AR, Bruce VK3UV.

The Editor's decision will be final and no correspondence will be entered into regarding the decision. Results will be published in June AR.

All entries to: AR Competition, Box 150, Toorak, 3142. On the back of the envelope, your name, address, call sign and the answers of a number accompanied by the appropriate letter. ■

NAME... CALLSIGN...
STREET...
SUBURB...
STATE...

ANSWERS

1	6
2	7
3	8
4	9
5	10

COMPETITION
W.I.A.,
P.O. BOX 150,
TOORAK. VIC. 3142.

Amateur Arthropods

An arthropod has antennae, a tough hide, very little brain, and is very short-sighted — and unfortunately a few have crept into the amateur ranks. You can recognise them on air by the way they repeatedly choose the frequency, time, and mode of their activity in a way which causes maximum inconvenience to other band users.

Some more examples are:—

THE 2 METRE TRAPDOORS

The trapdoors have a line-of-sight path of 400 metres or less between their stations, but persist in conducting their rag-chews through the most distant repeater which both can access. They need high power to access the repeater noise-free, so they wipe out the neighbour's TV set as well as needlessly tying up the repeater.

Now for the sixty-four dollar question — are there any amateur arthropods in *our* club? Of course, everyone would hope not, although at a recent meeting — for a fleeting moment — it almost looked as though one chap sitting near the back had six feet tucked under his chair.

THE 15 METRE FUNNELWEBS

These specialise in long, cross-town rag-chews in the Novice sub-band whenever the band is open, and are very successful in irritating lots of other users. They tie up a channel halfway round the world, and cause interference to local users trying to work weak DX stations on nearby frequencies. The 15 metre Novice band is only 75 kHz wide, so it only takes a few funnelwebs to completely fang out a Saturday or Sunday afternoon DX session for Novice operators. The funnelwebs never consider moving to 80 metres or 10 metres to keep out of everyone's way.

THE 80 METRE EARWIG

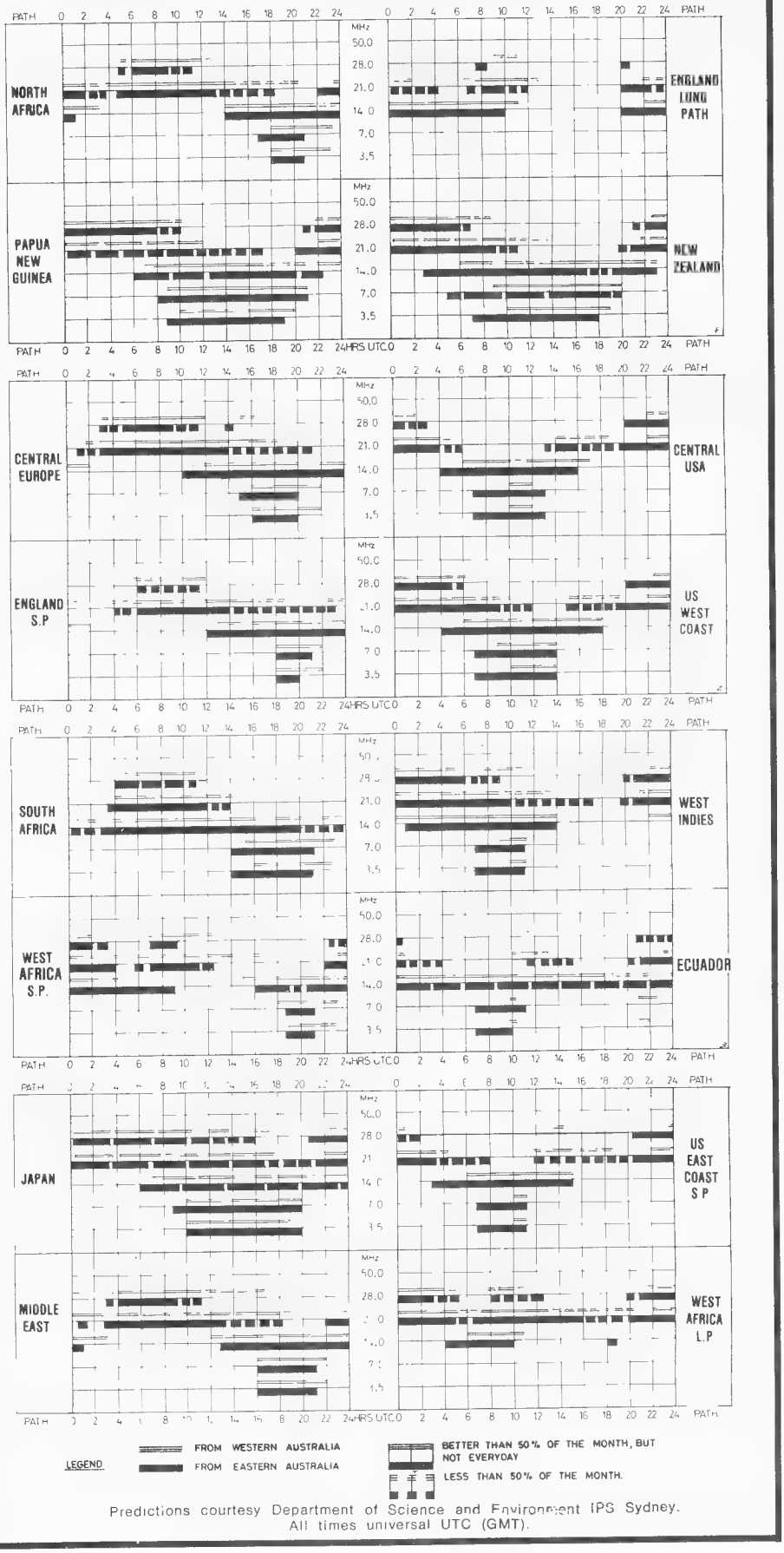
In his eagerness to get on the band, the earwig spends most of Saturday evening trying to reduce the SWR on his new dipole. As a result, he makes a channel completely useless over several states at a time when the band is most congested. It wouldn't occur to him to do his tuning in daylight, when the band is relatively empty and he won't be heard over a great distance anyway.

When he's all set up, the earwig can be heard most evenings, for hours on end, in an exclusive QSO with his mate in the next suburb. He doesn't stop to think that he is hogging valuable spectrum space across several states, and that he would help everyone by moving to 10 metres.

The WIA is in business for more members. Please help.

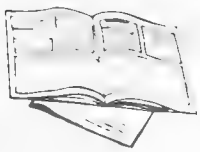
IONOSPHERIC PREDICTIONS

Len Poynter
VK3BYE



Predictions courtesy Department of Science and Environment IPS Sydney.
All times universal UTC (GMT).

BOOK REVIEW



In the early days of radio transmitting amateurs were very much aware of developments in the radio communications field. However with the passing of time there have been increasingly rapid advances. The use of communications satellites has become commonplace, while computers are taking an ever increasing role in telecommunications with its rapid diversification. This growth has made it difficult for the amateur to keep up with all current advances.

In his book "Global Talk" (published by Sijhoff and Noordhoff) J. N. Pelton has, in a language that is easily understood, reviewed the current telecommunications explosion.

The communications situation in both the developed and developing countries is discussed, as are the social implications of present and proposed new telecommunications uses.

The information on satellites is particularly interesting to those not actively involved in the field but with a peripheral interest, as also is the chapter on cosmic communications.

In summary, a readable book with a lot of information which would be of interest to the radio amateur.

"Global Talk", J. N. Pelton.

Price: $11.95 paperback, $25.00 hardback.

Our copy from —
The Australian Distributors,
D.A. Book Depot Pty. Ltd.,
11-13 Station Street, Mitcham,
Victoria 3132.

VK3ADW. ■

A pedestrian is a man who has two cars, a wife and one or more teenage children.

Tact is the art of making a point without making an enemy.

WARNING!!

Disposing of your old rig??

Please ensure it goes ONLY to someone licensed to use it on YOUR bands.

Overseas Visitors

During the 1981/82 Christmas/New Year season, Al Slater G3FXB (DX contestant, FOC Secretary/President and a long-time friend of many Australian amateurs) spent a very pleasant four week holiday in Australia, accompanied by his wife Maud and daughter Dianne.

They travelled from Sydney to Perth via Melbourne, Kyneton, Mt. Gambier and Adelaide. Hosts along the way included VKs 2BPN, 2NI, 3AYI, 3MO, 5MS, 5RG and 6RU, with numerous visits made to other stations along the traversed route.

Highlights of their trip included the Grampians, Adelaide lights, Indian Pacific Railway, and of course the many wineries visited in South Australia. Al, Maud and Dianne are now back in England but are continually praising the hospitality friendship and cordial welcome they received from all the VKs and their XYLs that they were fortunate enough to meet.

The photograph was taken at a barbeque held in their honour at Rob's VK5RG on 4th January, 1982. Two special guests to meet Al after years of on-air friendship were Jack DeCure VK5KO and Pete Bowman VK5FM.

In the photo are—
Back: Clem VK5GL, Bob VK5MM, Les VK5NJ, Rob VK5RG.
Front: Pete VK5FM, Al G3FXB, Jack VK5KO, Steve VK5ZB/BXG.
VK5RG. ■

A recent visitor to Melbourne was Mr. Yoshito Tanaka, JA6VVS, a Trustee of the Japan Amateur Radio League, Inc. Yoshito attended the 11th Pan Pacific Congress of Real Estate Appraisers, Valuers and Counsellors. Alan Noble brought the visitors to an Executive meeting and in this picture Yoshito is the central figure flanked on his right by two friends. On his left is Courtney Scott VK3BNG, Federal Treasurer, followed by Bill Roper VK3ARZ, with glasses, and Bill Rice VK3ABP, Chairman of FTAC, with beard. In the back row, left to right, are Bruce Bathols VK3UV, Executive Vice Chairman and Editor of AR, Harold Hepburn VK3AFQ, Alan Noble VK3BBM, VK3 Federal Councillor, Peter Wolfenden VK3KAU, Federal President, David Wardlaw VK3ADW, Immediate Past Federal President and Joint IARU Liaison Officer. Unable to attend were Michael Owen VK3KI and Ken Seddon VK3ACS (overseas). Yoshito is active around 21250 kHz Mondays around 12.00-13.00 UTC.

Picture: VK3UV ■

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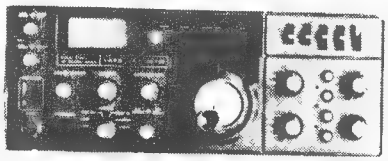

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RF SPEECH PROCESSOR
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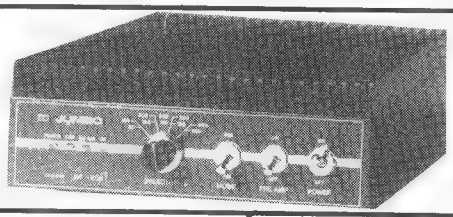

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12 months total warranty inc. C/P devices. RC1 **$29**

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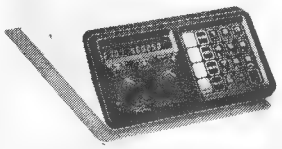

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Edited by Ron Cook VK3AFW
7 Dallas Ave., Oakleigh 3166

KEEPING THE COAX CONNECTED

In a recent article on preparing for the 30 metre band (AR January 1982) I described a method for attaching coaxial cable to a wire dipole or similar wire antenna. John VK5JG has written to say he has used this method but found that wind movement caused the inner wire of the smaller coax cables to fracture. He also experienced some corrosion problems. Both problems can be greatly reduced by a liberal application of silicone sealant.

As a result of his experiences, John has developed an improved method which is useful for all wire antenna. It is strong and provides an excellent seal for the cable. Fig. 1 shows the arrangement.

The shell is made from a 2 in. piece of 1 in. diameter hardwood dowel or other hardwood timber. A ⅝ in. diameter central hole is drilled about 1¼ in. down the length and the hole is continued through the 2 in. length with a drill that will make the hole a close fit for the coax to be used. The coax is slipped into the hole, pulled through, stripped as shown, and the inner and braid each soldered to a piece of 12 or 14 s.w.g. copper wire. These wires are clamped on the outside and the assembly is slipped back into the hole, which is filled with Araldite. The longer setting super strength Araldite is used as its penetration is better.

When the Araldite is set the wood can be whittled to shape and the wires bent as required to connect to the antenna. The outside of the shell can be coated with more Araldite. John believes Araldite has good HF insulation properties and the results obtained have not indicated otherwise.

John reports no failures after several years of use. Thank you for a very helpful idea John, it is one I am sure all our readers will appreciate.

There must be many of you out there in "AR reader land" with useful ideas for the novice. Why not drop a short note in the mail and share your idea?

CORRECTION

One astute reader, George VK3GI, spotted an error in Novice Notes for November 1981. The last calculation of mismatch and cable loss was shown as 14.4 dB. The correct calculation in expanded form is given below.

Transmitter output: 10 watts.

Power input to aerial after 10 dB coax loss: 1 watt.

Power accepted by aerial with 4 : 1 VSWR: 0.64 watt.

Reflected power: 0.36 watt.

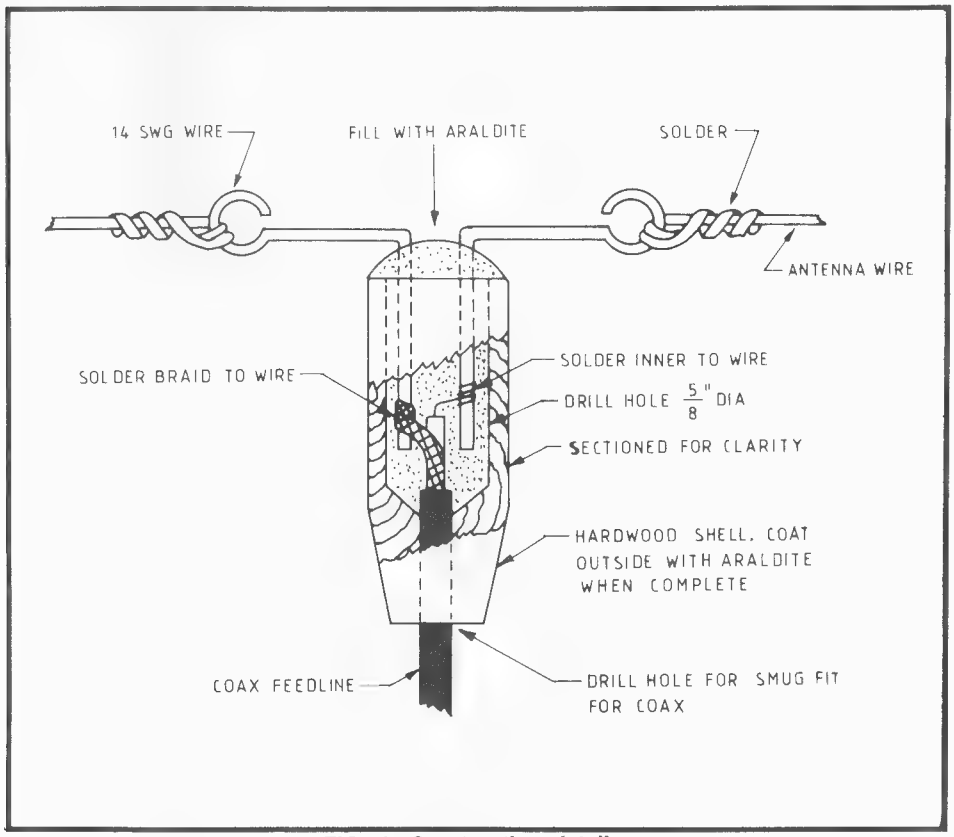
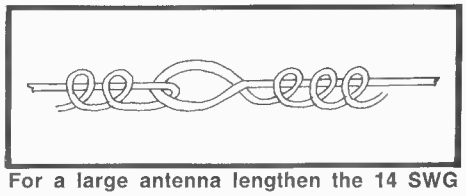


FIG. 1: Construction details



For a large antenna lengthen the 14 SWG tails and close, twisting back to form a strong loop.

Power reflected and read at meter in shack: 0.036 watt.

Indicated VSWR: 1.13 : 1.

(The error was in the next bit.)

If the aerial radiates all accepted power system gain 10 log (0.64/10)
—11.9 dB.

That is a loss of 2-3 "S" units, or nearly 12 dB. (Thanks, George.)

George has written an article on the topic of loss in coax and antenna VSWR, which I recommend for careful reading. See page 24.

The moral is still the same. Keep your coax losses low if you want better reports.

LEARNING CW

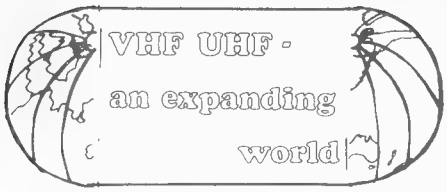
Did you read the article on learning CW by Alan VK3AMD? If not get a copy of February AR; it's a must for the beginner. ■

MOBILE FM v. SSB

Noting some official trial reports to evaluate user experience of mobile SSB (with pilot carrier) at about 160 MHz compared with 12.5 kHz and 25 kHz channelling FM, Pat Hawker G3VA, writing in TT Rad. Comm., February 1982, says:—

"These early results indicated that 25 kHz FM was a fairly clear winner, particularly at longer distances, although SSB could (theoretically) provide five times the number of channels. In 'Electronics Letters' (29 October 1981, vol. 17, No. 22, pp. 852-4) A. J. Motley, of British Telecom Research Laboratories, provides further detailed results of these trials, including experience under conditions of co-channel interference. Using the scale 0-4 (4 indicating complete relaxation possible and no effort required, and 0 no meaning understood with any feasible effort), the following results were achieved. Without co-channel interference: 2.4 with 25 kHz FM; 2.2 with 12.5 kHz FM; and 1.9 with SSB. With co-channel interference: 2.4 with 25 kHz FM; 2.1 with 12.5 kHz FM; and 1.8 with SSB. The author comes to the following conclusions: 'These results indicate that using SSB for mobile radio telephony would degrade subjective performance compared with 12.5 kHz channelling and FM by as much as is experienced in changing from 25 to 12.5 kHz FM. Also, SSB would require a higher co-channel interference protection ratio than FM; somewhere above 20 dB seems necessary. However, companding was not employed and may, in practice, improve SSB performance, particularly in the presence of co-channel interference. Also further work (not reported) on impulsive noise blanking shows that the effects of ignition noise can be much reduced.'

'Companding' is a reference to a sophisticated form of 'ACSB' (amplitude companded SSB) that has been developed at Stanford University, USA, and in the UK at Bath University. The transmitted signal is compressed before transmission and then expanded in the receiver by means of very fast AGC circuitry". ■



Eric Jamieson VK5LP
Forreston, S.A. 5233

SIX METRES AND TWO METRES

Interesting to note the Solar Flux was very high around the end of January, early February period. On 28/1 to 1/2 it was 156 to 256 with an average of 218.9, and rising to 301 at one period on 1/2. It will be very interesting to see what these figures produce in the way of contacts in the Northern Hemisphere where most of the spectacular activity seems to occur.

It may be worth noting that the excellent 2 metre signals from VK4RO and others from northern Queensland occurred on 31/1 coinciding with the high solar flux, but, of course, this may be totally unrelated to those contacts, but I would almost be prepared to wager there was some tie up. As pointed out last month, there was an absence of short skip contacts at the time of the VK4RO contacts to VK5, signals on 6 metres were strong but not unusually so, so the conditions didn't quite tie up so satisfactorily as they generally do for such 2 metre contacts.

Bob VK5ZRO reported working VK6WG on 3/2 at 2115Z via a repeater whilst mobile, then on 4/2 at 072OZ onwards worked VK6BE and VK6XY on 144.100 then followed with a 70 cm contact with VK6XY at 0955Z. From information exchanged during these contacts it seems the band had generally been open on 2 metres anyway for at least 3 days, once again tying in with the often reported good period around the end of January.

Good 6 metre opening to VK7 from 0915 to 1215Z, then to 11/2 at 1205Z VK8GF 5x9, followed by S7 signals from JA1, 2, 3, 4, 5 and 6, the strong Es pushing the JA signals further south than usual.

To vary the contacts Bob VK5ZRO fired up on 2 metres and with his 28 MHz listening device at 1025Z worked YB0AT via RS6 and at 1050Z via RS8, the Russian satellites, using a vertical antenna on 28 MHz to produce S7 signals. He also worked VK7LZ and VK2BA. Just to prove what can be done if you try, Bob worked VK3XPW via Oscar 8 mode A on 15/2!

20/2: Some excitement in VK4 when it seemed weak CW was being heard around 013OZ peaking NNW and possibly emanating from KL7. When the CW came out of the noise sufficiently here in VK5 it turned out to be a JH7!

21/2: David VK5CK stirring the VK3 camp a bit by sending both 144 and 432 MHz signals that way. Worked Rob VK3BHS at Stawell about 1020Z on both bands, then VK3XDP in Bendigo. Mick VK5ZDR also worked them on 2 metres. VK5LP had to be content with working VK3BHS on 144.050 only! But, as someone else cruelly remarked, I should be thankful for small mercies anyway!

Bob VK5ZRO continues nightly to have contacts with VK5XRG at Whyalla and VK5ZMJ at Pt. Pirie on 144 and 432 MHz. Signals on the latter band vary from S2 to S9+ depending on conditions. Distances are around 220km to Whyalla and 190km to Port Pirie.

David VK5KK at Arthurton on Yorke Peninsula has been working on his 1296 MHz equipment and hopefully will have 40 watts output soon. This should be quite a help when the next contacts are attempted to Albany, etc.

On the 17th January VK5ZRO worked VK6XY, VK6BQ and VK6KJ around 0610Z on 144.100, then followed up with 70 cm contact to VK6KJ who was S9+ with 10 watts. VK5ZMI also worked VK6KJ with 3 watts!

Further news just to hand re 31/1 (that magic day) when VK6WG and VK6KJ were worked by VK5ZRO on both 144 and 432 MHz. Any of these contacts are pretty good as the distances we are looking at are around 2000 km.

1296 MHz CONTACT

Information is a bit sketchy at the moment but it seems Dick VK2BDN worked Brian ZL1AVZ on 8/2 at 1947Z on 1296 MHz for what might yet be a new record, which is presently held by VK6KZ/6 and VK5MC at 1309 miles. It seems the VK2-ZL contact may be slightly longer around 1330 miles. It is understood ZL1AVZ was using 1.5 watts to a 3.6m dish, and Dick VK2BDN 2 watts. Whatever may be the final outcome of this contact, congratulations are due to both these gents for a very fine effort, and it would seem to be the first contact on that band between VK and another country. Well done!

5800 MHz RECORD

While we were talking about the Ultra High Frequencies, I note in December 1981 "Break-In" that the New Zealand record has been extended on 5800 MHz by ZL3FJ and ZL3NW from 138 km to 180.4 km on 10/10/81. The report says: "The record attempt was made in conjunction with a day set aside to check out equipment in preparation for the December Field Day. Signals on 23 cm were colossal, however not as strong as on the ex-commercial 5 cms equipment, this was probably due to the grazing microwave path between the 2 post office sites as the altitude is only several hundred feet at both ends.

Equipment in use at both ends comprised 1 watt Varian klystrons using two 20dB horn antennas with cross coupling for the 30 MHz IF, backend bandwidth was in the region of 200 KHz. Modifications are to be made in the hope of extending the distance still further shortly."

While still in New Zealand I note ZL1AVZ, ZL2KT and ZL1MQ at least worked T32AB on 10/10/81. That's certainly a very rare contact!

SMIRK NEWS

The latest Newsletter from SMIRK contains a number of items worth passing on to readers.

The next SMIRK 6 metre contest will be held on 18-20th June, 1982. This is a preliminary notice of date and information on the contest is to arrive soon in another newsletter.

Membership renewals are now $3 US, not $9 as some think. Initial membership is now $6 US, which includes the dues for that year. Due to high cost of posting newsletters to overseas members it is likely dues by these members will be $6 US before long. More on this later.

SPECIAL AWARD: The Six Metre International Radio Klub 6-6 Net (SMIRK) has the following to say about a special award.

"During the past several years of high solar activity, a number of 6 metre operators have attained the high plateau of having worked and confirmed 2-way contacts with at least 50 countries on the 50-54 MHz band. This is an accomplishment that would have been unheard of less than 10 years ago when there were only about half that many countries active. There are now over 100 countries actively operating the 6 metre band now, with some operators havng worked over 60 and some say, over 70 countries directly on 6 metres. SMIRK will recognize the efforts made by awarding a beautiful trophy to the one operator who can prove that he first made contact with 50 ARRL listed countries on the 6 metre band. Here are the requirements for the award:

"Operators who have worked and confirmed by QSL, 50 countries on 6 metres (no crossband contacts outside the 6 metre band can be accepted), should send Dick Lent, W5NKG, 5634 Seacomber Place, San Antonio, TX 78242, U.S.A., a list showing each of the 50 2-way contacts made. This list must show the full name, call sign and address of the operator applying for the award; the call sign of each station worked; date and time of each contact; mode of emission used; and the name of the ARRL Countries Listed country worked. The applicant must still be active on the 6 metre band.

"This award application must be verified by two dis-interested licenced amateur radio operators. The application must be signed by the applicant and the two witnesses, giving full names and call signs. QSL's are not required to be sent with the application but must be available should SMIRK request them for verification. This award will be free to the awardee. Deadline for application is 1st May 1982, postmark. The award is in the form of a golden globe of the world, with the continents outlined, borne on the wings of two golden eagles. It is topped by the number 50, in gold, on a golden horseshoe. It will be an award to cherish. Apply now before you miss the deadline."

Unfortunately, I doubt if the award is likely to be claimed by anyone in Australia as we have had to work under severe disadvantages with our 52 to 54 MHz band instead of the greater part of the world which enjoys a better position at 50 to 54 MHz. Good luck to whoever wins the award, it will be well deserved. It is hoped

SMIRK will continue to recognize in some form or other the other operators who will eventually also reach 50 and more countries.

I did mention in my last notes and will mention here again that I am firmly opposed to those amateurs who are claiming having Worked-All-Continents (WAC) on 6 metres without having worked Australia. I cannot see by the fondest imagination that working some area in Oceania (Pacific area), e.g. Guam, New Hebrides, etc., can be classed as working the sixth Continent. Whether those in Europe or the Americas like it or not, Australia IS the sixth Continent and no claims for working all Continents should be entertained until such time as the operators have, in fact, worked Australia. If such claims are to be accepted, then I could conceivably claim to work Africa if I should work say The Seychelles in the Indian Ocean, or to have worked U.S.A. by working Cuba or Bermuda. Fair go, fellows, do it properly! Just try making that sort of claim for an HF award requiring all Continents!

THE SUNSPOT CYCLE

Graham VK6RO has been trying to assemble for me an excellent set of charts outlining the peaks and troughs of sunspot cycles from 1945 to 1981. They are very interesting, but we are missing the one covering 1958 to 1970 and these charts are contained in the Japanese language CQ ham radio magazine, and we need the graph from the November 1981 issue. Can anyone oblige with a copy please so we can have a look at the full period involved? There is also another chart sent by Graham showing details of reception of 5B4CY, etc., in Japan and I want to include details of this at a later date.

TECHNICAL TIP

Something always suspected, but just recently proved, was that the use of PL259 plugs on coaxial cable for 432 MHz produces a significant hump in the SWR and causes the loss of power.

Recently David VK5CK and I (VK5LP) were carrying out tests on the ATN type 16LB 432 MHz antenna (more on the reasons for this later) and using the Bird 47 watt meter with it's N connectors, we were connecting the 16LB with FR1 50 ohm coax with a PL259 plug on the transmitter end. This was converted to N fitting by a short cable with N one end and PL259 the other with a joiner to connect to the coax lead. At some stage we wondered what would happen if we improved the termination, so a special adaptor was found which dispensed with the joiner and converted straight to N. An immediate improvement was noted. The PL259 was then removed from the coax and an N plug fitted, the SWR went almost down to unity and picked up several watts in output power. So it seems the often used PL259 doesn't really do well at 432 MHz as we have been told for years, it's upper limit for the better constructed types seems to be 144 MHz, and those with poorer insulation no higher than 6 metres.

CLOSURE

This month of April will hopefully see some signals coming from across the Pacific into Australia for what might be a last ditch fling before Cycle 21 closes down. Last year Easter Monday was an incredible day for Australia, with 7 to 8 overseas countries being worked on 52 MHz and a further 7 to 8 being heard on 50 MHz but not worked. Will there we a repeat? Best times to listen will probably still be early morning up to 0000Z and again in the afternoon from about 0730Z onwards, but hopefully other signals will be available at odd hours of the day. Certainly be on the band as much as possible during the weekends and over Easter, and Anzac Day, 25th April will be available as a holiday on Monday, 26th April, this year, another possibility.

May I make a plea to all operators — if there are exotic signals around keep your contacts with them short, exchange signal reports and names and leave it at that; this way the rare ones can be shared by more. And if a rare station appears on the band on more than one occasion and you have already worked him, don't rush in and work him again just to be able to say you have done it again — be fair enough to let others who may not have been so fortunate previously to now try, only go in again when the DX station seems to be calling and getting no response.

Closing with the thought for the month: "The list of public problems that will get worse before they get better looks as if it will get longer before it gets shorter." 73. The Voice in the Hills. ■

Reg Dwyer VK1BR
PO Box 236, Jamison 2614

CONTEST CALENDAR

April

3-4	POLISH CW CONTEST
17-18	POLISH PHONE
24-2	HELVETIA

May

29-30	CQ WW WPX CW.

Please do not use the new 10 MHz band for contest operation, there is only a small portion of the band allocated to the amateur service and then it's on a secondary basis. Part of the band has been allocated to low power stations and it could cause interference problems if contests were to be held on the adjacent frequencies.

RESULTS OF THE 1982 ROSS HULL VHF CONTEST

Following is the results of the 1982 Contest. Although the level of activity was not very high, there were some excellent performances by those who did submit a log.

From the results it is obvious that those operators who were able to utilize a compliment of bands had an advantage over the single band operators. The Contest is designed to promote the full and useful operation of these newer frequencies with a view to improving radio frequency techniques in the VHF and UHF regions.

Remember, if we don't use them, we lose them.

Thank you for the excellent quality of the logs submitted and the comments/ wishes contained on them.

Now the results.

The overall winner is Walter J. Howse VK6KZ.

1982 ROSS HULL VHF CONTEST
7 DAY SECTION

Call Sign	Score	Bands Used				
		52	144	432	1296	2304
*VK6KZ	34310	52	144	432	1296	2304
VK2ASZ	7290	52	144	—	—	—
VK2KCI	6992	52	144	—	—	—
VK3YNB	5280	52	144	432	—	—
VK3XQ	5010	52	144	—	—	—
VK7KJ	4912	52	144	—	—	—
VK4DO	4722	52	144	—	—	—
VK2ZQC	4100	52	144	432	1296	—
VK3YRP	3630	52	144	—	—	—
VK2BDN	3532	52	144	432	1296	—
VK3VF	3065	52	144	432	—	—
VK2ZIR	2217	52	—	—	—	—
VK7ZZ	944	52	144	—	—	—
VK2YVY	862	52	144	—	—	—
VK4ZTV	770	52	144	—	—	—

ROSS HULL VHF CONTEST
2 DAY SECTION

Call Sign	Score	Bands Used				
		52	144	432	1296	2304
VK6KZ	1150	52	144	432	1296	2304
*VK2ASZ	3034	52	144	—	—	—
VK2KCI	2550	52	144	—	—	—
VK3YNB	2070	52	144	432	—	—
VK2BDN	1952	52	144	432	1296	—
VK3XQ	1936	52	144	—	—	—
VK7KJ	1838	52	144	—	—	—
VK4DO	1464	52	144	—	—	—
VK3YRP	1354	52	144	—	—	—
VK3VF	1011	52	144	432	—	—
VK2ZIR	747	52	—	—	—	—
VK8GF	700	52	—	—	—	—
VK2YVY	336	52	144	—	—	—
VK4ZTV	278	52	144	—	—	—
VK5ZTP	83	52	144	—	—	—

No SWL logs were received up to the closing date of the Contest.

NOTE: As VK6KZ has won the 7 day section he cannot be eligible for the 2 day section. Therefore Robert Lear VK2ASZ has won this section with the highest acceptable score.

The * mark shows a certificate winner.

Congratulations to all who entered. ■

Photographs for AR
DON'T KEEP THEM TO YOURSELF
Send them in – NOW

INTERNATIONAL NEWS

● Stop Press

Just received is a circular from Mr. M. Mili, Secretary-General of the ITU regarding WCY '83, part of which reads:—

"Since the early days of radio, radio amateurs have contributed to the technological and scientific development of communications as an instrument of peace, friendship, and technical education. Radio amateurs throughout the world now have a unique opportunity of helping to strengthen the ITU's efforts to develop the world's communications infrastructures.

It would be appreciated if you could publicize the Year on the largest possible scale and I should be grateful for any information you could give me in this connection and, in particular, on any events which you might be able to organize for radio amateurs during the Year." ■

8J1ITU was the special call sign allocated in Japan to mark World Telecommunication Day, 17th May, 1981.

CHINA

The following preface from "Wuxidian", the monthly radio magazine published in Beijing, January, 1982 issue, issued by Cheng Ping, Secretary General of the China Radio Sport Association and received via JARL and IARU R3 Association will be of interest to many members:—

"Thanks to the support given by all leading bodies concerned and through the active preparation made by departments involved, the Supreme Executive Council of China has officially approved the re-opening and development of the long awaited activities of Amateur Radio in China.

Amateur radio stations to be established shall be organised on club system basis with a leader in charge.

First station to open will be in Beijing, where conditions are already met for operation then followed by other stations to be installed in provinces, regions and cities.

After operating for some time, all experiences accrued from these activities will be put together by gradual steps in order to facilitate the extension of the scope of activities as well as to perfect the system and method of management.

Possible sites envisaged for establishing Amateur Radio stations are: various military physical educational schools, universities, colleges, youth culture centres and science and technical institutions that will meet the objective requirements.

Persons participating in Amateur Radio activities should support the guiding principle of the Chinese Communist Party, devote themselves to the socialistic motherland and obey the national laws and governing regulations of radio communication. Also, they should cherish the idea of internationalism and humanism, have lofty character and respect culture and manners. In addition, they must actively pursue their work and endeavour to raise technical standards, thus devoting to the progress of society and bringing peace to mankind.

Each of the club stations should file application for opening of radio station and acquire licence. For the time being, no permit will be issued to stations on individual basis. Those wishing to take in Amateur must first receive training in this art, pass the examination and acquire certification for operation before participating in the activities of the designated club stations.

Use of frequencies, extent of communication and activities will be, in general, along the lines established in the international Amateur Radio regulations.

The development of Amateur Radio activities will not only be instrumental in training persons with talent in the radio telecommunications and electronic fields but also provide ground for study and experiments of scientific techniques to many of the Amateur Radio enthuiasts. Furthermore, it will be able to promote technical exchanges with ham enthusiasts both in China and foreign countries as well as to enhance the friendship between them.

In particular, the youth can greatly benefit from this development in that it will enlarge their mental vision, raise their desire of taking part in this activity. It will also enrich their scientific knowledge and greatly develop their talent in this field. It will go a long way in making an all-round development of intelligence, virtue, the body and, as a link of four modernisation programs, train potential technical personnel in radio telecommunication technology.

Presently, the China Radio Sport Association is actively making preparation for this program and it will not be too long before BY1PK will be on the air."

IARU R3 ASSOCIATION CONFERENCE

This Fifth Triennial Conference, scheduled for 2nd to 5th April in Manila, has a very full agenda. Apart from considering the reports of each member society, financial matters require close attention, particularly in relation to future commitments and the level of annual dues payable by the member societies.

There is a wide range of subjects down for discussion, which include:—

- Anticipating the future popularity of the 10 MHz band, the RSGB proposed narrow-band methods of transmission only.
- Another RSGB paper suggests the tone (T) part of telegraphy reports should be abolished and signal strength reports should be simplified to —

  S1 barely perceptible
  S3 weak
  S5 fair
  S7 strong
  S9 extremely strong

  as suitable for reports by ear alone and still compatible with S meter readings.
- Standard specifications for QSL cards are agenda items sent in by HARTS, NZART and JARL.
- The World-wide QTH locator system is up for discussion on the basis of accepting both a 'Human Language Code System' (based on latitude and longitude) as developed by JARL and the Region 1 locator based on a "squares" concept.
- The NZART introduced the concept of an "International Amateur Radio Licence" similar to the International driving licence (this idea was accepted at the WIA 1979 Federal Convention).
- An IARU R3 Association Award is put forward by NZART.
- NZART propose more attention be given to the exploitation of the amateur GHz bands, also in the light of Region 1 work on the subject.
- A world-wide co-ordination of member society contests dates is suggested by NZART.
- The WIA submitted papers relating to—
  1. The great importance of CCIR work;
  2. The need for visitors ('guest') licensing as being desirable in overseas countries;
  3. Discussion papers on work done in Australia by EMC and non-ionizing radiation;
  4. A study on the first 5 years of Novice licensing in Australia, including up-grading trends;
  5. Amateur radio involvement in WCY 83.

THIRD PARTY

On application by the WIA the DOC commenced negotiations through diplomatic channels for an ad hoc short term agreement on third party with Brazil specifically for the Sydney-Rio yacht race, which began in January. The eventual reply from the Brazilian Embassy was in the negative on the grounds that the race is being monitored by the Brazilian Maritime Mobile Service and Amateur Stations in any event are permitted to pass on distress calls by third parties. ■

Robin Harwood VK7RH
5 Helen St., Launceston, Tasmania 7250

One of the indispensible aids in my shack that I use in my monitoring, is a copy of the World Radio TV Handbook. This is a most comprehensive and authoritive survey, concentrating mainly on shortwave, of all international and domestic radio and TV broadcasting stations throughout the World, together with their transmission times, facilities, personnel, languages, etc. As well, this 592 page Directory lists the current Standard Frequency & Time Signal Services operational at the present time.

One feature of interest to me especially in the 36th Edition, is a survey of receiving equipment currently available, which can be found at the rear of the Handbook. There are reviews of receivers from the professional models such as the Drake R4245 and the Racal RA6790/GM, the semi-professional Drake R7A (which gets quite an extensive review) to semi-portables such as the Sony CRF-1. All these sets were evaluated by Larry Magne, a well-known Stateside DXer. Personally, I find these comparisons of performances obtained from the different models extremely helpful. The WRTH editors have indicated this survey will be included annually in all future editions of the Handbook. The 1982 Edition is published by Billboard Limited, and is edited by Jens Frost, assisted by Andy Sennit. It should be by now available in most technical bookshops or depots. My copy came direct from the publishers in Denmark and is certainly well worth the price.

ESPERANTO

Another section I noted in the 1982 WRTH, is a section devoted to broadcasts in Esperanto. In the latter half of the 19th Century, a need arose for a Universal language, especially in Europe with its many differing languages and dialects. So attempts were made to devise an international language. A German linguistic scholar, Johann Martin Schleyer, developed a language called "VOLAPUK" in 1880, based partly on English. It, alas, had its weaknesses and inconsistencies and fell into disuse. In 1887, Dr. L. L. Zamenhof published his book called "ESPERANTO". In it he devised an artificially created lingua franca that is a mixture of Continental European languages with a very simple grammar.

Although it did gain some ground, particularly in Central and Eastern Europe, during the early part of this Century, its use has been mainly restricted to intellectual circles, and has not spread to the vast majority of the populace. There are an estimated 450,000 people worldwide who can speak Esperanto and, as a consequence, there is not a wide listening audience for programmes aired in this language. Only half a dozen stations are utilizing it, and only weekly at that. Radio Peking and Radio Vaticana probably are the easiest ones heard within this region. R. Vaticana can be heard at 0510 UTC April to September (0610 October til March) on 11740 KHz on Thursdays. When I first encountered this programme, I was stumped trying to identify the language.

CHINA

Now those who monitor broadcasts from China, and wish to submit reports of reception to the various stations, don't just assume that the Programme is in Chinese. Although a quarter of the World's population are Chinese, its language is broken down and fragmented into a myriad of dialects, hindering conversation of people from different parts of the Nation. Fortunately, the written lanuage (or ideograms) is understood by all, despite its 2,000+ characters. These dialects mirror the different regions where they are spoken. For example, Cantonese, Chaochow, Amoy, Hakka, Szechuanese, Changhaiese are all spoken in the regions from which they derive their names. As well, there is a Standard Chinese spoken, known as Mandarin. This, in Imperial times, was the administrative lingua franca and widely used in those circles.

Many SW outlets of PRC Domestic Services do use predominantly Mandarin as well as regional languages. Programmes are also broadcast in the languages of the Minorities such as Mongolian, Kazakh, Uighur, Vietnamese, Tibetan, etc. All stations at some time will carry programmes from Peking (Beijing), but Provincial stations have their own broadcasts, often in some regional dialects. Here are two examples of this: The Fujian Front Station, which broadcasts to Taiwan and the offshore islands controlled by the Nationalists, uses the Amoy dialect at 1100 UTC on 7025 KHz, while another station located nearby has programmes on 7095 KHz in Standard Chinese from either Shanghai or Beijing at the same time. Very soon, you will be able to discern the differences between Mandarin and the dialects.

Many International stations broadcasting to China and S.E. Asia do use Mandardin, but especially Cantonese, as most emigration from China was from its Southern provincial regions, hence it is widely spoken outside of the PRC.

The Soviet Union employs the various dialects in its programmes specifically aimed to the major cities and regions where they are extensively spoken. As well, there are numerous shortwave outlets within the PRC with relays of the Domestic Services, together with special transmissions in Mandarin and/or dialects for the Overseas Chinese. A full listing of these services can be found in the latest WRTH (pp. 193-196).

CYPHER

Tuning across the bands, have you heard stations broadcasting five-number cypher groups in either Spanish or German? For many years now, I've come across these signals, usually on AM around 6.8-6.9 MHz variable, with a female announcer giving off a long stream of cypher groups. These often last for 15 minutes or so, and are on at different times and channels each day. Recently, I encountered one on our new thirty metre allocation at about 0745 UTC in Spanish. According to overseas reports, these are possibly engaged in espionage, and are reportedly located in either the German Democratic Republic or Cuba. An artificial language is also used sometimes, especially in Europe, where a number of channels between 3 and 5 MHz have been monitored.

There were similar operations launched by NATO countries during the Cold War period, but I don't know if they still use this alphanumeric cypher in Plain Language. Yet anti-Castro exiles in the States are known to be active in clandestine communications to Cuba, so perhaps some of the Spanish "numbers" stations could conceivably belong to them.

Well, that is all for this month. Until next time, the best of 73 and good DXing! ■

CALL BOOK DATA

REMINDER

The Editor is aware that there are still a small number of errors, duplications and omissions as well as uncorrected addresses in the current edition.

The data in the Call Book is only as accurate and complete as the information supplied to the Institute.

PLEASE tell us about any errors, etc., and please tell your amateur friends to tell us too. *Write to* —

WIA
Box 150, Toorak, Vic. 3142

GOOF DEPT. — Feb.

Murphy claimed his fair share in our February issue:

The article "Towers and the Law" page 14, was written and submitted by Ian Hunt VK5QX, and not John Ingham as noted. Our apologies to both.

Alan Doble's VK3AMD article entitled "Learning the Code for the First Time", page 23, contains a typographical error. The word 'increasing' in the 3rd column, 4th line, should be "decreasing".

Please amend your copy now.

VK3UV ■

BUYING OR SELLING GEAR?
HAMADS
MAKE IT HAPPEN FAST

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

Here are details of two new awards which are now available from within VK.

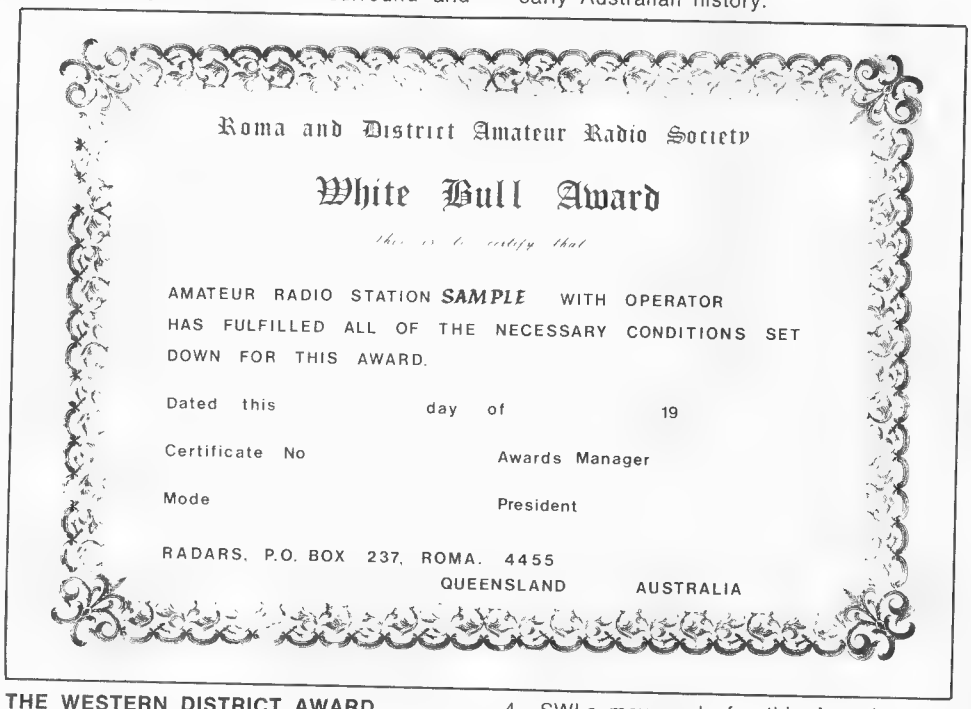
THE WHITE BULL AWARD

This award is available from the Roma and District Amateur Radio Society, Queensland, to licensed amateurs and SWLs in any part of the world, operating from a fixed, portable or mobile amateur station. The rules for this Award are:—

1. STATIONS OUTSIDE AUSTRALIA: By obtaining five (5) points by way of two-way contacts with licensed amateur members of The Roma and District Amateur Radio Society in the Roma District, Queensland, on either CW, FM, AM, SSB or RTTY on any amateur band.
2. STATIONS WITHIN AUSTRALIA: As above but seven (7) points are needed. (Stations resident in Roma Town or Bungil Shire are not eligible for the Award.)
3. No cross-mode contacts permitted.
4. Contacts on MF or HF count as one (1) point each. The first contact on VHF or above is worth two (2) points, all subsequent contacts count as one (1) point.
5. First contact with either club station VK4AEB or VK4NCI (ANY LICENSED BAND) is worth two (2) points, all subsequent contacts count as one (1) point.
6. Stations can only be worked once on any band.
7. Contest contacts not counted.
8. Points can be obtained by calling in on the Club net every Friday night (except third Friday) on 3.615 MHz ± QRM at 1000 UTC.
9. QSL cards are not required. Applicants must send a log extract containing all relevant information (date, time, frequency, mode, signal reports (sent/received), call sign).
10. Contacts made after 1st July, 1981, are eligible.
11. Cost of the Award is $2 (two dollars) or an equivalent amount of postage stamps. Overseas stations A$4 (four dollars Australian).
12. Address all applications to:—
    AWARDS MANAGER,
    Roma and District Amateur Radio Society,
    PO Box 237,
    Roma 4455,
    Queensland, Australia.

DESCRIPTION

This Award is printed in two colours on white card. The illustration of the "White Bull" is in yellow with the surround and all printing in black. The dimensions are 315 mm x 230 mm. Applicants for this Award will also receive a two-page foolscap writing describing the history of the "White Bull" and giving a very interesting insight into a little known incident of villainy which would probably only be known to the most advanced students of early Australian history.


Roma and District Amateur Radio Society

White Bull Award

This is to certify that

AMATEUR RADIO STATION *SAMPLE* WITH OPERATOR HAS FULFILLED ALL OF THE NECESSARY CONDITIONS SET DOWN FOR THIS AWARD.

Dated this day of 19

Certificate No Awards Manager

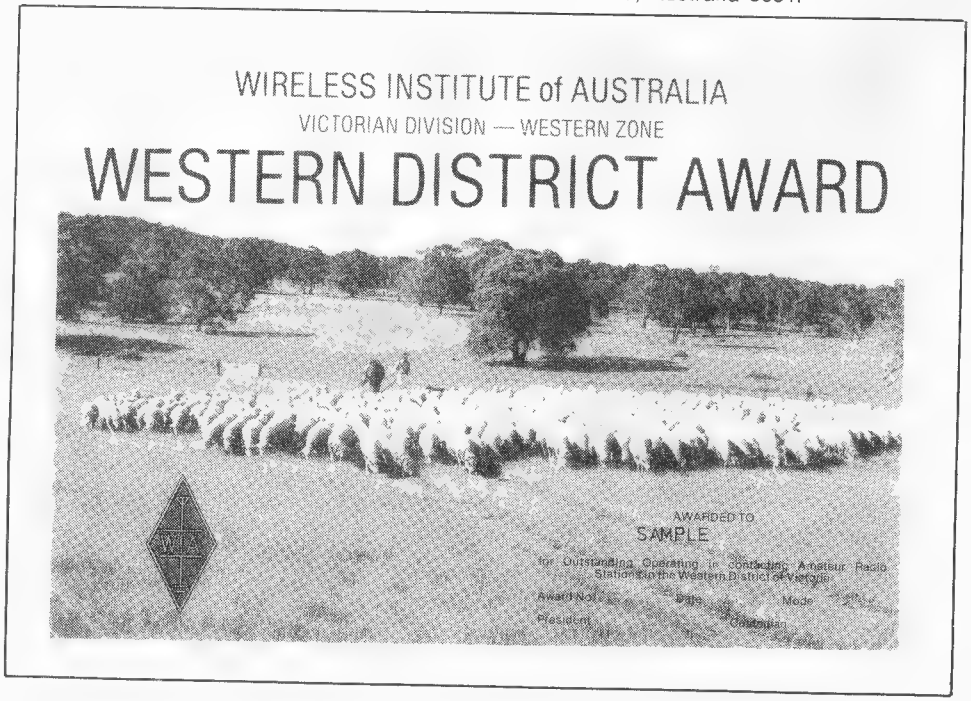
Mode President

RADARS, P.O. BOX 237, ROMA. 4455
QUEENSLAND AUSTRALIA

THE WESTERN DISTRICT AWARD

This new Award is now available from the Western Zone, Victorian Division of the WIA. The rules for this award are:—

1. VK STATIONS: Work 10 different amateur stations located in the Western Districts of Victoria (VK3).
2. DX STATIONS: Work 5 stations as above.
3. Any band, any mode, is acceptable.
4. SWLs may apply for this Award.
5. QSL cards are not required. A GCR log extract showing all relevant QSO details is accepted for this Award.
6. The cost of the Award is Aust. $2.00 or equivalent.
7. Applications may be sent to:—
   Awards Custodian, Maurie Batt,
   RSD, Rokewood Junction,
   Victoria, Australia 3351.



DESCRIPTION

This Award is a very encouraging departure from the norm and is in accordance with my particular personal preference. Other AR clubs, etc., who are considering creating their own award could do well to follow this example. All awards from New Zealand are in the same style. As can be seen from the illustration, the subject matter depicts a rural scene which is typical of the Western District of Victoria, and would perhaps convey to most overseas recipients an idea of the topography of some southern Australian bushland, and also illustrated a principal rural industry of Australia which is well known overseas.

This Award is predominantly green with a blue sky and black printing with WIA logo. The printing is a very high standard. This Award is a credit to the photographer who may have used some sort of movable film pack camera to get all detail in such sharp focus.

The Award is printed on high quality matt paper, measuring 310 mm x 220 mm and is well worth framing on the shack wall.

GOOD HUNTING. ■

No Songs for Hams

Harry Atkinson VK6WZ
294 Middleton Road, Albany, WA 6330

There are no movies going around just now about hams. And no songs about them on the charts.

So, gentlemen, we have to go out there and for the first time in eighty years or so get some mileage for our hobby.

We've been too modest (or too lazy) for too long.

Every time ham radio does something it should not only be reported on your Divisional broadcast and sent in to AR — it should also be brought to the notice of the print and electronic media.

So you provided communications during a flood or bushfire. Or your group has just built the latest and greatest repeater. Tell the media.

You've worked with youth groups on projects like JOTA. See that the radio TV and newspaper reporters get to know about it.

In February, David Cowper ZD7RB, sailing his 41 ft. (or 12 metre) sloop "Ocean Bound" around the world "the wrong way", made his first landfall since calling in at Falkland Islands, at Albany, W.A.

Many amateur operators in New Zealand and Australia assisted David with relayed weather data and other material and the last links on the western end of the Bight were Arthur VK6ART and Bernie VK6KJ — the former in Perth, the latter in Albany.

As David sailed into the Western Australian waters the tempo of QSOs built up. His wife Caroline and three-year-old son Freddie were flying out from the UK to meet him in Albany . . . an old friend from Queensland flew across the continent to be there . . . and an expert on automatic steering equipment was on his way from England.

The Six Kilo Charlie Travellers' Net . . . Bernie, Arthur and others were all kept busy teeing up all these things, plus making contact with the local sailing club, harbour authority and suppliers of various goods and services so that everything would be in readiness when "Ocean Bound" arrived.

And all the time David had to keep his overs short to conserve precious battery power to the rig which put out — would you believe? — three watts on 7 MHz!

By Monday, February 8, David was hopeful of landfall on the following Wednesday and activity increased in complexity and tempo.

Shortly after nine Monday morning the Southern Electronics Group handed to each of the five media in Albany — two newspapers plus national and commercial radio and television — a concise briefing which set out the names of yachtsman and boat, Bernie's name, call sign and telephone number, plus names and phone numbers of others likely to help the media get the full story.

The briefing also clearly set out that (a) amateur radio was over 80 years old, (b) it was recognized by almost every world government (c) it had provided consistent radio contact with "Ocean Bound" ever since it sailed out of Plymouth in Septembers last, and (d) ham radio was not to be confused with CB radio or pirates.

This briefing (it was not a "media release" — it was in concise, almost telegraphic style) also gave the media its first intimation of David's ETA.

The briefing paid off. All media gave David and his exploits full coverage and amateur radio got full (and correct) credit.

The ZL and VK content of the "Ocean Bound" radio saga must have taken up hundreds of operator-hours, no one knows how many dollars worth of local and STD phone calls and car mileage — and everyone involved deserves highest commendation.

It took one guy about one hour's work to see that all media in his town got the facts right and that all that much greater effort by all the others was at least briefly mentioned in press and on radio and TV.

Wouldn't it be worth just that little extra effort by someone in YOUR club to "woo the journos" and make some new friends? ■

NOW AVAILABLE

THE WOODPECKER BLANKER

- An entirely new approach using synchronous blanking
- A godsend to the serious 14 or 20m Dxer
- Can be used as both an IF stage blanker and an audio stage blanker — as an IF blanker connects into most existing transceiver noise blankers to give up to 70dB relief from the Woodpecker — as an audio blanker, can be easily plugged into any receiver or transceiver.
- Available as a kit or fully assembled and tested
- Kit includes fibreglass PCB, all components, cabinet front panel and full instructions.
- Requires a 12-15dc plug pack power supply or equivalent

COST

Kit $49

Fully Assembled and tested $75

plus $4.50 post and packing (extra $2 for overnight freight)

NICHOLLS COMMUNICATIONS

P.O. Box 246 Jamison, A.C.T. 2614
61 Wybalena Gve., Cook, A.C.T. 2614.

Please supply 1 Woodpecker Blanker

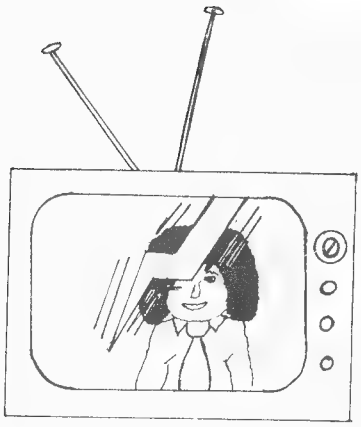
☐ Kit
☐ Fully Assembled

Name.....

Address.....

.....

I enclose cheque/money order for $ .....(include postage)



Tony Tregale VK3QQ
38 Wattle Drive, Watsonia 3087

NATIONAL EMC ADVISORY SERVICE

JUSTICE

"It is an unfortunate fact of life that in the majority of cases, right or wrong, the minority are persecuted by the majority." The Amateur Radio Movement is no exception! World-wide, radio amateurs have been fighting their case against unjust persecutions by authorities over "Radio Frequency Interference" for many years.

The true cause of most of the interference problems has been (and still is in many cases) the susceptibility of domestic entertainment equipment to unwanted information.

After many years of fighting this unenviable battle against superior odds, we are at last seeing some light at the end of the tunnel. A recent DOC review of the "Citizen Band Radio Service" stated in Section:—

4.15.1. A considerable number of submissions relate to interference to Radio and TV reception caused by CBRS transmissions and to the operation of audio and home entertainment equipment.

4.15.2. The Committee understands that the major contributor to this problem is the vulnerability of entertainment equipment and is of the opinion that the solution lies in improved immunity of this equipment coupled with maintenance of existing power and aerial gain restrictions within the CBRS equipment specifications.

4.15.3. The Committee *understands* that action to improve equipment immunity to interference is being pursued.

7/5. A major problem causing interference is the vulnerability of entertainment equipment. Action to improve equipment immunity to interference is being pursued (para. 4.15.3).

POT-POUR-RI

Essendon airport — aircraft approaching from the east reported hearing broadcasting stations (sometimes 3DB, sometimes 3UZ) on 116.1 MHz; several aircraft reported the problem. As the problem could not be heard at the control tower, an airborne search was made, and the interference was found to be located in the Preston area.

After a detailed investigation it was found that the transmission was emanating from a broadcast receiver in a house in Preston. The RMIT investigated the receiver, which was impounded by the RI. The RMIT concluded that the output valve (6V6) was oscillating on 116.1 MHz — caused by a faulty bypass capacitor, and the length of the wires to the speaker played an important part in deciding the frequency of oscillation. The "oscillator" was being grid modulated by whatever station was tuned-in by the receiver's owner.

During the years 1946-1950 the Department of Transport had a receiving station at Craigieburn. A battery of HF receivers was connected to Essendon by land-lines. Occasionally the tower would report 3LO coming through on 4495 kHz. Each time a technician was sent to Craigieburn the interference had stopped. Many hours of investigations revealed nothing: It was only by accident that the problem was found. Riggers, while working at the top of one of the towers, happened to throw a piece of timber down which struck one of the guys—vibrations caused intermittent reception of 3LO at Essendon Tower. Oxidation between a thimble and a turnbuckle halfway down the guy was enough to create diode action and re-radiate a good 3LO signal on 4495 kHz, despite the fact that 3LO Sydenham is 7-8 miles away.

PERSECUTION?

A recent example of incredible persecution comes from a NSW amateur:—

"My recent experiences with a nearby resident and his complaint about TVI from my amateur radio station reached a sequel before Christmas 1981, when all cables from my radio tower were deliberately cut to put my station off the air.

The culprit(s) of this action are known but because they were not caught in the act of committing the offence no action can be taken by myself to seek redress for damage caused, according to the police who were called in to investigate the sabotage.

The police subsequently interviewed the suspect resident who naturally denied any involvement in the act!

The events leading up to the cutting of the cables are summarised as follows:—

Over the last three years since the resident moved into the street, he has complained of TVI so often that I had been restricting my on-air operating hours mainly because he would not allow me to observe the so-called TVI while another amateur operated my rigs, comprising a Kenwood TS-520 and a Swan 750CW transceivers.

It should be mentioned that my home colour TV receiver, a Sanyo 53 cm set using a 7 element yagi antenna for reception, is free of TVI with the exception of Ch. 2 Sydney which has such a low field strength on the Central Coast that TVI on that channel would not be investigated by the Inspectors.

Eventually in December 1980 the Radio Branch of Telecom was requested to assist me to resolve the resident's TVI problems.

An RI duly arrived some days later and he asked me to transmit alternatively between the TS-520 and Swan 750CW rigs using CW and SSB modes on 14, 21 and 28 MHz bands, each rig being run full power into a Hy-gain 3 element triband yagi antenna pointed into the resident's TV antenna.

At the conclusion of these RI supervised tests, the RI said he was not able to detect any TVI when I was transmitting, however he noticed severe HT power line interference.

This resident, however, would not accept the RI's verbal report, so he decided to put his home up for sale and get away from my location, and for about three months after the RI's visit all was quiet and I continued to operate my station with Telecom approval, but a buyer for the resident's home did not eventuate!

The resident then spoke to me one evening to say in very terse words that I owed him $30,000 compensation for him not being able to sell his home because of the radio tower in my back yard! I replied equally tersely, telling him where to go!!

For the record, the erection and approval of the tower installation was done by my local Council to drawings supplied by Nally Towers of Melbourne.

Anyhow, from this time on no direct verbal contact was kept with the resident but he did speak aloud one day, vowing to cut the cables to my tower to stop me operating the station, he also said that I was not a radio amateur but a "Communist radio spy" because I spent so much time on the air!

After putting up with these threats and abuse, I again called in Telecom in late November 1981 for a final TVI check, but before the RIs could come the tower cables were cut by person(s) assumed to be from the TVI complainant's home, there being no other neighbour with a hate complex for amateurs!

To conclude, two RIs came to conduct the second round of TVI tests, one RI stayed with me in my shack to ensure that I was operating my equipment to a stipulated procedure while the other RI operated the resident's TV set through the

channels, and the only TVI that could be detected was from my TS-520 rig when used on 28 MHz SSB, and as I only use CW on the 10 metre band, then this TVI presence was not pertinent to the complaint!

The RIs told the resident complaining of TVI that my station was not causing interference, therefore I could operate my station with a clean slate. Justice had been done at last."

SHARING

If you have any interference problems, answers, information or ideas — don't sit on it, please forward the details and help us to help you. ■

APOLOGY

Due to unforseen circumstances the information relating to the Department of Communications was omitted from the RFI Directory of Assistance last month. I hope to include this next month.

VK5 OLD TIMERS' GATHERING

The annual Old Timers' lunch for South Australian radio amateurs was held on Thursday, 19th November, at the Marion Hotel, and was attended by 88 of the Old Timers.

This lunch has been held for the last four years with increasing attendance each year, and it is a very happy and enjoyable function where old friendships and old acquaintances are renewed.

This year the guest speaker was Mr. Graham Pitts VK5GE. He is an old time radio amateur who spent most of his life as radio operator in the Royal Flying Doctor Service and he spoke of his experiences, some amusing and some traumatic, in that service.

After lunch, ragchewing went on until late in the afternoon and the thanks of the Old Timers are due to George VK5RX and his committee for a very well organised and enjoyable day. ■

BRAAGIS

According to Rad. Comm. February 1982 a new voluntary service has begun in the UK to assist the visually handicapped amateur and electronics enthusiast by providing information on the various auditory aids which are available and which will help them in the pursuance of their hobby activities. This service is the "Blind Radio Amateurs' Auditory Gimmicks Information Service". "Auditory Gimmick" is a convenient way of describing any device which will convert a visual reading into an auditory signal which a blind person can use. The service is two-way — it would like to have details of any work already done in devising such aids as well as providing to the visually handicapped person whatever information is available; merely send a cassette outlining the particular needs. No charge is made so IRCs for return postage would help. Organiser is Peter Jones, BEM, G3DRE, 69 Prospect Road, Bradway, Sheffield, Yorks S174JB. ■

MAGAZINE REVIEW

Roy Hartkopf VK3AOH
34 Toolangi Road, Alphington 3078

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular interest to the Novice.

73 MAGAZINE January 1982
Constant Current from a voltage regulator. (P). Mountain climbing expedition. (G). Station Charlie, Wartime underground radio. (G). Microwave test gear construction. (C).

QST September 1981
Universal synthesiser. (P). 432 MHz transmatch. (C). QRP Transmitter. (N).

QST December 1981
Equipment Servicing. (N). Bilateral Transverter. (P). Braille Transducer. (G).

BREAK IN November 1981
Year of the Disabled Issue. (G).

CQ October 1981
Two Chip Transmitter. (G, N).

CQ November 1981
RTTY Special Issue.

73 MAGAZINE February 1982
Simple Varicap VFO. (C, N). Mods to the TR2400. (P). The Father of FM. (G).
TR2400. (P). The Father of FM. (G). ■

Brenda Edmonds VK3KT
56 Baden Powell Drive, Frankston 3199

I have been asked several times recently for advice on studying for an Amateur licence. Most of the queries come from persons who have made two or more unsuccessful attempts at the exam, and are now becoming discouraged.

My first advice is to urge you to keep trying. You are not alone. Many now active amateurs had to make several attempts. There is a great feeling of achievement when you do finally get there.

The Novice and AOCP exams are designed to test knowledge and understanding of radio theory over the whole of the syllabus. Some of this can be learnt by heart, but most of it requires an understanding of the basics. There are very few short cuts. Understanding is rarely acquired simply by reading a textbook or attending a series of classes.

Study techniques are a fairly personal thing. Try a range until you find what suits you best. Try reading and summarizing, underlining, reading out loud, re-writing from notes, putting onto cassettes for later playback. Read as many textbooks for each topic as you can, and summarise each so that you build up a comprehensive set of notes to complement the class notes.

Working with one or two others may be useful to maintain enthusiasm and offer mutual support. However, be sure it is a working group, not a social one. Do not take one person's opinions on trust — when there is doubt or disagreement always check from a reference book until everyone is agreed.

An important part of studying is practice in answering multi-choice questions. There are many sets of questions available now. Go through a set after each section studied, check the answers, then check back to see why 'a' or 'e' was the correct alternative. Practice answering sets of questions in a given time span — allow a little over one minute per question.

The time usually comes when it is necessary to ask for help. Here is where it is useful to have contact with other amateurs — the local club is probably the easiest way. Decide what questions you need to ask, and ask specific questions about particular topics.

Finally — exam technique. READ THE QUESTION! Answer the question that has been asked, not what you would like it to be. Mark an answer for EVERY question. Most questions have one or two alternatives that can be ruled out fairly easily, so think carefully about the others, but **do** put an answer in. Make sure that you transfer your selection to the appropriate spot on the answer sheet — only one alternative per question.

Take your time. Do not become flustered if others appear to be ahead of you, or if they start walking out when you are only half through. Perhaps they only answered half the questions.

I have not said anything about building or using radio equipment. Many people find this very useful, particularly when trouble-shooting is involved. A vast amount of theory can be accumulated while trying to work out why the newly built gadget doesn't do its thing. However, it can be very time consuming and expensive.

Next month I hope to make some comments about textbooks and magazines that we have found useful for students. If you have any favourite texts or articles, I would be pleased to hear about them.

The next Novice Trial Exam should be available from the Executive Office shortly after you receive this. These papers are prepared as an aid to class instructors but are available to private students also on request. Members of classes are asked not to send for them without checking first to see if their class instructor intends to use them as a Trial Exam.

Best wishes to all.

73. Brenda VK3KT. ■

VK2 MINI BULLETIN

COUNCIL REPORT

At the January meeting, Mark Salmon VK2DI advised of his impending resignation as Slow Morse Supervisor for VK2BWI. Council noted the excellent work he and his volunteer operators perform in a valuable service to members and amateurs generally. Any member who is interested in taking over Mark's position can contact Divisional Office.

At the February meeting, Jeff VK2BYY reported on progress with the proposed Dural Fireworks Night to be held on 5th June. To facilitate catering arrangements, 350 tickets ONLY will be sold prior to the night — listen to broadcasts for details. Any member who can assist with parking and catering on the night can contact Jeff on broadcast callbacks.

Repeater Officer Tim VK2ZTM reported that several UHF repeater applications are being processed by DOC. Much of the delay is caused by the fact that these applications must be processed through Head Office in Melbourne.

Following is a report of the 1981 WICEN Co-ordinators' Conference.

WICEN

WICEN CO-ORDINATORS' MEETING as reported by David Mackay VK2ZMZ, Secretary, WICEN VK2: '81/'82.

VK2 WICEN is a fairly large organisation with approximately 150 financial members spread throughout the state in a large number of community areas. Since its reactivation in 1975 VK2 WICEN has been administered by a committee based in Sydney with co-ordinators appointed to train and organise groups of amateurs with a geographic affinity.

Where necessary a Regional Co-ordinator has been appointed to cover one of the states decentralisation regions with special regions defined in and about Sydney where the population density is greater.

To enable the exchange of information and ideas and to provide feedback for the committee, the Regional Co-ordinators meet each year with the Committee. Last year's meeting took place in Sydney over the weekend of 14-15th November. This is the first time that the meeting has been extended to two days.

The weekend started at 1000 hours at the Wireless Institute Centre at St. Leonards with a discussion session. As mentioned above this session required very little effort to start but took some stopping to allow Bruce Purdie, a Senior Paramedic with the N.S.W. Ambulance to start the next session.

Bruce discussed a subject that is very vital to us all, but which many of those at the meeting had not taken much time to familiarise themselves — that is: PRESERVING LIFE.

Apart from our duty to ourselves, our families and our fellows, to at least be familiar with elementary first aid, WICEN members will find themselves placed in situations where the likelihood of injury is greater. A set of notes on this subject is being distributed to WICEN Co-ordinators, however, any WICEN group which would like further information on how to improve their skills in this vital area should contact the committee.

The business meeting of the weekend was held at the 729 Club on Saturday afternoon. The first item was the official opening of the Sydney WICEN 2m repeater by Chuck Wise, Managing Director of Tandy Corporation of Australia, whose generous donation to WICEN made the provision of the repeater possible. Thanks also go to VICOM and HiQ Crystals for their assistance with the provision of equipment and services.

Howard Freeman VK2NL in the State WICEN Co-ordinators' report, referred to the greater recognition and acclaim that WICEN had received during the year from the Statutory Authorities as a result of WICEN's involvement in major exercises and in emergency operational roles.

This acceptance had resulted from the close liaison established and maintained with the prime emergency authority, the N.S.W. Police Department, and the sterling efforts of the WICEN members activated to assist the authorities. Although WICEN successfully provided communications on behalf of the authorities during the Telecom industrial disputes, the greatest benefit to WICEN was the practical experience and the lessons learnt from the many mistakes made.

During the year three new Regional Co-ordinators had been appointed. Andy VK2NWA for Sydney West and the Blue Mountains; Max VK2BMK for the North Coast, and Jim VK2AJO for the Orana region covering the western area of the state. Sid Ward VK2SW and David Thompson VK2BDT have resigned as Regional WICEN Co-ordinators.

With careful management of WICEN funds during the year it had been possible to repay an outstanding $600 loan from the VK2WIA Council.

After discussing the value that the WICEN member gets for his subscription, it was decided to maintain WICEN dues at the same level as last year, i.e. $5.00 for Full and Trainee members and $3.00 for Associate members.

Howard announced his intention to retire as State Co-ordinator at the end of March, 1982, so that he could make arrangements for his retirement from the work force early in 1983. The position of State Co-ordinator was a full-time leisure activity which, he said, would not have allowed him to arrange his own future.

Neville VK2DR, who normally controls the weekly VK2 WICEN net on 3600 KHz each Thursday at 2130 local time, reported on the low participation in the net, but believed that the many interesting accounts of WICEN exercises and other activities were heard by a fairly large audience of listeners. Neville would like to hear from anyone who has suggestions on ways to improve the net.

A number of other items of interest were also discussed until time ran out and the room had to be cleared for dinner.

After dinner, Alan Forsyth, representing the John Fairfax group of companies and the Organising Committee of the "Sun City to Surf", presented an Icom IC-720A and power supply to WICEN in recognition of the public service provided on a voluntary basis by WICEN. This fine piece of equipment will relieve the FT DX 400 which could not quite keep up with the pace during the Telecom activation and which was a worry because of its MAINS power supply dependence.

Senior Constable Bruce Gane, of the N.S.W. Police Rescue Squad, rounded off a long day with a well illustrated explanation of the work of the Police Rescue Squads and a case study of the Granville Train Disaster. A lively discussion followed on the role of WICEN in assisting the Police Rescue Squads during major disasters.

On Sunday, Ray Gill, Deputy Sydney Area Co-ordinator of the Volunteer Rescue Association of N.S.W. and Chairman of the VRA Radio Committee, led a discussion on the role of WICEN as the specialist communications squad of the VRA.

After a number of activations this year, a session on activation procedures served to consolidate the many lessons learnt, into a set of guide lines for the future. These guidelines are available from WICEN Co-ordinators and will no doubt be updated as our operational experience increases.

The weekend meeting was scheduled to finish at this point to enable country participants to travel home, but, due to its inertia it continued through the afternoon with two film case studies of fire disasters and videotape of the search for the missing aircraft in the Barrington Tops area in August, 1981.

The N.S.W. WICEN Committee would like to thank all those who contributed to the success of this year's Co-ordinators' meeting by participating. In particular we would like to acknowledge the guest speakers already mentioned, who gave up their time to attend and our other guests — Athol Tilley, WIA Divisional President; Ron Henderson, Federal WICEN Co-ordinator, and Colin Christiansen, representing the N.S.W. State Manager of the Department of Communications.

6 METRE BEACON

Jock VK2ZQX reports on the latest 6 metre beacon, VK2RGB, which is located on Porcupine Hill, immediately south of Gunnedah at approximately 440m above sea level. The beacon runs 6W into a ground plane antenna (which may have been updated to either crossed dipoles or similar omni-directional horizontal antenna by the time you read this) and idents every 30 seconds with 'VK2RGB Gunnedah' followed by a carrier. Congratulations to Jock and

all those involved in setting up the beacon. All reports on the beacon, which can be heard on 52.425 MHz, should be sent to Jock Watson VK2ZQX at PO Box 639, Gunnedah, 2380.

Details on five clubs affiliated with the NSW Division:

SOUTHERN HIGHLANDS ARS.
c/- Telephone Exchange, Bowral, 2576.
Net: Sundays at 8.30 p.m. on 3.615 MHz using VK2BFI.
Meetings: Mittagong Shire Chambers on 1st Fridays.
President: F. Ritchie VK2VGX; V.-Pres.: G. Goode VK2VIG; Sec.: K. Orchard VK2BXY; Others: B. Goodman VK2-ZAG, T. Lee VK2AOS.
Magazine: SHARS published bi-monthly.
Repeater: VK2RHR ch 7350 from Mt. Gibraltar, 50 km SW of Sydney and 850 m ASL. 10W with time out of 3 m and a mobile range of 100 km.

SUMMERLAND ARC
PO Box 524, Lismore, 2480.
Net: Fridays at 1800 EST on 146.8 MHz using VK2AGH.
Meetings: Kadina High School on alternate months.
President: Graeme VK2GJ; V.-Pres.: John VK2KCK; Sec.: Frank VK2KFB; Other: Betty VK2VTQ.
Newsletter: Published bi-monthly by editor Frank VK2KFB.
Repeaters: VK2RIT ch. 6800 at Parrots Nest, 400 m ASL. 25W with 3 m time-out and approximate range of 140 km. UHF repeater awaiting the approval of DOC.
Divisional Broadcasts relayed onto ch. 6800 on Sunday mornings.

TUMUT ADARC
c/- 93 Lockhart Street, Adelong, 2729.
Meetings and classes: Every Wednesday at Tumut High School, NAOCP and AOCP.
President: R. Dodd VK2DLZ; V.-Pres.: Vince VK2ALZ; Sec.: Ted Dean L20586; Others: Ross VK2PN, Bill VK2DPZ, Jack VK2DUL, Butch VK2-BYS.

BLUE MOUNTAINS ARC
PO Box 54, Springwood, 2777.
Net: Tuesdays at 8 p.m. on 3540kHz using VK2AUX or VK2NCM.
Meetings: Springwood High School, Chapmain Parade, Faulconbridge on first Mondays (except Public Holidays, when second Mondays).
Classes: Informal AOCP and NAOCP at clubrooms, Springwood High School. Contact Secretary (047) 39 3615.
President: Peter VK2DAV; V.-Pres.: John VK2VJD; Sec.: John VK2VPG; Others: Eoin VK2ZRI, Dennis VK2KAF, Noel VK2ZNS.
Magazine: "Ragchew", monthly; editor, John VK2VPG.
Repeaters: VK2RBM ch. 7050 at Blaxland (temporarily) 300 m ASL. 12W with 3m timeout and approximate range of 10-60 km. UHF repeater application awaiting DOC approval.
Field Day: Mid-November at Springwood High School.

An activity night, which can be anything from practical work to a ragchew, is held at the clubroom on third Monday each month.

TAREE ARC
PO Box 712, Taree, 2430.
Nets: Mondays at 8 p.m. on 28.48 and 146.5 MHz.
Meetings: SES Headquarters, Victoria Street, Taree second Tuesdays.
Classes: Chatham High School, AOCP and NAOCP, Wednesdays at 6.30 p.m.
President: G. Hunziker VK2BGF; V.-Pres.: C. Withers VK2BVI; N. Gough VK2KGD; Sec.: M. Richardson VK2-BVQ; Others: G. Tibbits VK2PVF, B. Cross VK2KBB, M. Stahl VK2AHD.

COMING EVENTS

16th April: Close of agenda for 6th Conference of Clubs.

5th June: Dural Fireworks Night — coinciding with 25th Anniversary of opening of Dural VK2WI.

23rd May: 6th Conference of Clubs at Revesby Workers' Club. Host Club: Liverpool ADARC.

N.S.W. members and clubs are invited to submit news for inclusion in this column to PO Box 123, St. Leonards, 2065. News for June AR should reach us by 20th April.

Susan Brown VK2BSB ■

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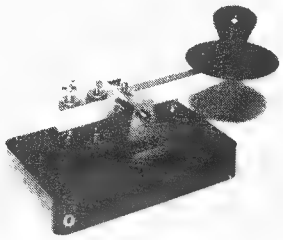
OVER 1000 OF THESE SUPERB KEYS HAVE NOW BEEN SOLD IN AUSTRALIA



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VK2 QSL Bureau, Gosford Field Day — February 21st.

:: ::

Monday is an awful way to spend one-seventh of your life.

:: ::

:: ::

All you need to grow fine, vigorous grass is a crack in your sidewalk.

:: ::

Ken J. McLachlan VK3AH
PO Box 39, Mooroolbark 3138

STOP PRESS: BY1PG active. ZL2BAO heard North American stations with W7PHO as control, working the Club station.

The sunspots may have become a little anaemic but irregular openings have appeared on all bands. Ten metre signals are perhaps not armchair copy but very workable with an abundance of countries and stations to choose from. Fifteen metres provided excellent and consistent openings to Europe and South America with mediocre results being obtained from elsewhere.

Twenty has been very unreliable even to long path openings toward North America (both paths) which were dependable over the last couple of months but the Europeans are starting to show and could provide some interest on long winter nights.

A long standing weekly sched with VE2 on twenty is now starting to show promise, so for VE contacts particularly watch 14.180-200 MHz (avoiding 14.195 please) on the short path around 1100 UTC.

Thirty metres is not to be overlooked, although no good for awards it does provide much scope for experimentation with antennae, also propagation will be very interesting in the coming months and should provide many pleasant QSO's and listening on both CW and SSB.

Whilst listening around on twenty recently, I was astounded to hear an experienced VK operator incessantly "yodelling" his call sign to work 1A0KM. Skip on twenty was fair to this station, whose "needle" had really got "stuck in the groove" and, combined with VOX clicks, the signal was taking up more than its share of estate, but my heart really went out to his amateur neighbours as their receivers would be taking the brunt of the incessant, also superfluous, use of the call sign which was given about 6 to 8 times per minute..

Will the same thing happen when 3Y0 and other much wanted countries hit the airways, hopefully later this year or early next year? One sure bet is that amateurs in close proximity will not use the "land line" to alert him it is on, before they have worked it themselves. Personally, I would be waiting until the card was in my hand before passing the word with that sort of behaviour but there is probably a selfish streak in my nature.

Anyway to nicer subjects. Mario has indicated that he and his three helpers will move into the Novice section of fifteen metres when propagation is good towards VK. This will be a transceive operation for working NOVICES only. Wait!!! One will spoil it for all.

"Someone take a list or I will miss out", "What's the call?", "What country is it?" and "Who is the QSL guy if I get him in the log" on the operating frequency was chatter that could have been conducted elsewhere. No wonder Mario I0MGM, the stations QSL Manager, who was operating at the time "packed his bags", leaving them all wondering.

NOVEL SWL REPORT

Towards the middle of February a package arrived from HB9 land which contained an hour recording of contacts that had been made from this QTH at 0130 local time on the first of that month. Of course, the band was ten metres and the QRM, which wasn't worrying me, was unbelievable as heard from Fri, HE9OZH's QTH where my signal was apparently holding the meter beyond the nine on his receiver. His antenna is an indoor dipole in the roof.

Fri, has achieved the EUROPA 300 and 5BDXCC Awards and had the kindness to enclose a small gift for my XYL Bett who is my QSL Manager. Fri will definitely receive a card and letter for thoughtfulness and an unusually accurate report.

QSL BUREAUX

Those that QSL to SWLers can assist the folks that voluntarily sort your cards by placing the country of origin underneath the allotted prefix and number. Due to seldom seeing some of the rarer allocations as used by some administrations it slows the sorting process down, sometimes even that they are put aside until the card's intended destination can be determined.

DX FRIEND

Mike, VE2MCS, who is fifteen years old, is interested in regular scheds with other DX orientated amateurs in VK around his age group. If interested, Mike's address is RR No. 2, Caledon, Ontario, Canada. L0N!C0.

ESPERANTO NETS

If you are interested in conversing in Esperanto, which is an artificial language based on words common to the chief European languages (refer "Spotlight on SWLing" this issue) then join one of the many nets which cater for VK, Oceania or Worldwide participation.

For further details contact Errol VK3GG QTHR, who is the VK representative.

CHECK POINT

For those interested in CQ Magazine's awards and to save the expense of shipping cards overseas, the VK checkpoint is Doug VK3NDY. So for some of these prestigious awards, mail to QTHR for more information.

SSTV

According to ARRL Broadcast No. 16 from W1AW the FCC has relaxed its rules concerning SSTV transmissions allowing experimentation and operation on all portions of the bands where voice communication is permitted except 160 metres as from the 22nd February, '82. Does this mean that we can see our stateside friends on frequencies below 14.200 and cannot work them on transceive? I don't think so as it probably refers to FCC frequency allocations.

Quite a number of VK's are interested in SSTV and if anyone reading these notes would care to share the month to month happenings of this mode as they hear it, they would be most welcome. A note to QTHR will receive a reply.

NON-APPEARANCE!

PY0 St. Peter and St. Paul's
PY0 Trindade.

APPEARANCE????

VK9 Mellish Reef
VU7 Andamans.
VU7 Laccadives.

STAMPS AGAIN

A number of readers have volunteered their pet waves of getting letters to certain countries unopened. Some of the novel ways include "Tearing the perforations off one side of the stamp rendering it useless", "Punching 2 or 3 5 mm holes in the stamp before it is placed on the letter" and "Some Post Offices have a cash resister which produces a paper tape, this is affixed to the letter in the same way as a stamp". The latter suggestion would be worth an enquiry with the local Postmaster with a view to ascertaining the nearest one to your locale.

XZ5A AND XZ9A

Sanplo and Laydoh's interest in DXing has waned over the last few weeks according to all that are still awaiting a contact and the QSL Manager JA8BMK has not endeared himself to many VK operators who have direct QSLed with the "necessary" for a prompt return and are still waiting. Please don't blame the operators, they, it is felt, are quite unaware of the happenings, however it is believed that the VK1 Bureau have had a lot of cards with self-addressed envelopes bulk mailed to them. This unsolicited "gift" will be distributed by the time you read this to other Bureaus at their expense and you don't have to be Sherlock Holmes to figure out where the IRC's or "green stamps" have gone. Where all the Co-axial coble, connectors, ARRL Handbooks and other operating aids which were donated in good faith by Stateside amateurs went we will leave for Dr. Watson to solve.

The invaluable W6GO/K6HHD QSL DIRECTORY notes that all XZ9A contacts beginning 15/01/82 to JA8IXM, so good luck if you have worked Lahdoh since that date.

HOLIDAYS?

A TROPICAL POLYNESIAN ISLAND WITH WHITE SANDY BEACHES AND A QUIET LAGOON WHICH IS PROTECTED FROM THE PACFIC OCEAN BY A CORAL REEF. Sounds like a travel brochure but this will be "home" to Jocelyn, ZL2BAO from the 24th of April until the 2nd of May. Jos is taking herself to Raratonga for a DXing holiday and will be looking at joining the YL nets, the ANZA net (which she capably controls on Thursdays) and other nets as time permits. This is one 'pedition where the Novices will not be forgotten and the three element beam which is going on the plane as "hand luggage" will be pointed towards VK. Slow CW and SSB modes will be used on 10, 15 and 20 metres as conditions permit.

Trying to find a little about Jocelyn proved a difficult task as she is very reluctant to discuss herself but I've found out that there was a fascination since primary school when Jos lived next to an amateur and she was intrigued by the way he disappeared into the garden shed, which was draped with "lots of wires and had wire poles on the roof". Jos was very curious but was sternly bidden "that's no place for little girls" by her father.

Three years ago, through a chance encounter with CB and MAYDAYS whilst on the OM's boat, Jos met some amateurs, who persuaded her to study for a licence. A VHF licence was obtained and this was quickly updated four months later. Twelve months later Jos again faced the Radio Inspector to demonstrate her prowess with the key. Jos describes leaving the RI's as "Now the WORLD is mine". However, for a time Jos was very "mike shy" but Heather, VK2HD soon took her in tow and after being introduced around the nets things became much easier. It was only a few short weeks and Jos's daughter discovered that 75 different countries had been QSOed, so now a challenge was to reach 100 in the first three months, then 150 was the next target. On reaching it Jos was offered a tower, beam and rotator at a bargain price. "What a difference" are her remarks and she has been in every "pile up" since.

Ambitions include 5 Band DXCC, which is coming along slowly, particularly on the lower bands with "home brew" G5RVs and slopers and 100 watts fed into them, however the quote is "I am having a lot of fun and meeting great people."

Jos is always willing to "help out" and finds time to be Secretary of the local NZART Branch, whilst ably looking after the OM and three children. She is very proud to say that amateur radio need not be an expensive hobby as she worked her first 150 countries for less than $400 on an old Yaesu FT200.

Joselyn ZL2BAO, ZK1??, an enjoyable flight with the Icom 730 and other "hand luggage" and many QSO's to many who will want a new YL country. QSL's are guaranteed and no "RIP OFFS".

I believe the amateur fraternity needs many more ZL2BAO's!

Jos ZL2BAO

NEW PREFIX

EZ — QSL to Box 88, Moscow via the Bureau. The holders of these callsigns are Russian Novices.

Sincere thanks to all who have assisted by contributing, including VKs 3DU, KF, UX, YL, DFD, 4KA, AIX, 5WV, 6HD, IH, NE, 9ZH, and SWL30042.

One closing thought: Have you joined a new member lately? I have and am looking for more.

Good DXing. 73.

SSB WORKED ON THE WEST COAST

10/8Q7BN, 10/A9XZ, 10/C31XS, 10/CR9BH, 10/JT1KAI, 10/PJ7ARI, 10/VK2PJJ/LH, 15/CR9BH, 15/LU5ZI, 20/9G1AP, 20/FP8HL, 20/FY0FOL, 20/JT60UB, 20/LU5ZI, 20/OX3ZM (YL), 20/T32AE, 20/VK9YA, 20/VP2EO, 20/VP2KA, 20/VP8ANT, 20/XZ9A, 20/ZB2J, 40/VP2VD.

SSB WORKED ON THE EAST COAST
(Shown in Band, Mode and Call Sign)

10/CW/YJ8VU, 14/CW/BV2A, 21/CW/3D2CH, 21/CW/9J8HSU, 21/CW/M1C, 21/CW/VS6EY, 21/SSB/9M6MD, 21/SSB/AH0A, 21/SSB/DK6UVH/TI5, 21/SSB/GB2ASE, 21/SSB/KA4P/KH4, 21/SSB/PY5BI, 21/SSB/PZ5AA, 28/SSB/A9XF, 28/SSB/CG5AE, 28/SSB/CG5MC, 28/SSB/FO0JTP, 28/SSB/JD1BAT, 28/SSB/NS4B/AH8, 28/SSB/VE3NFR/4U, 28/SSB/VS6CT, 28/SSB/VS6DX, 28/SSB/VS6EM, 28/SSB/VS6GZ, 28/SSB/WB0MKR/KH3.

CW WORKED ON THE WEST COAST

1.8: DJ8FW, EL2FY, EZ2AAD, EZ6ACC, F8VJ, G's, GD4BEG, GM3ZSP, OH0NA, OH5NQ, RB5GEM, RF6FFW, UA3DQH, UA3ZCG, UK2PCR, UK6AAP, UK6DIT, UP2BIO, UT5AB, VS6DO.
3.5: 5Z4CS, EL2FY, GI3IVJ, GW3YDX & GM3YTH, UF6FAL, UM8PAC

QSL ADDRESSES

5B4JK:
Box 1671, Nicosia, Cyprus

5N0ATW:
Box 3197, Lagos, Nigeria.

7P8BY:
Box 423, Maseru, Lesotho.

CT2CB:
Box 44, Santa Maria Is., Azores.

EA8AAY:
Box 860, Las Palmas, Canary Islands.

HT1JCC:
Box 1122, Managua, Nicaragua.

N2BVJ/LX:
1501 W. First St., Abilene, KS 67410, USA.

PA0WAY/A6:
Box 5708, Dubai, United Arab Emirates.

PY5BI:
Box 79, Londrina City, Brazil.

LISTENING CW WITH ERIC L30042

80m:
DF5CD, DF5KR, F6KAW, F6KLY, GI3IVJ, HA5KKG, HA6OQ, HA7RD, HA0KLE, HG9HB, LZ2TT, UB5NCV, YU1AFI and YU3TSD.

40m:
A4XJP, F6APE, FK8DK, KG6RT, LZ2VP, UB5UKF, UP2NK, VK9NL, N6YK/V2A, K9MK/V2A, YB9ADE, YU3TOC/Y and 4Z4AB.

30m:
C6ABA, DJ2HH, DJ2VK, DL6NI, DJ6RX, F6HGH, F9NG, G3FRO, G3SED, GI3IVJ, HB9ZY, OK1AGN, OZ1W, P29DH, VK8HA, VK9NL and YJ8VU.

20m:
CX5AO, FK0AF, FM7WA, FO0PT, GD8KMZ, HL9KT, IS0HQJ, KV4CI, LU1GK, PA0VDV/PJ7, T30AT, UJ8XCI, VK0AN, VP9DR, K9DX/V2A, WP4BBM, YV1AD, YJ8VU, YBAES, ZK2BGD and 4U1UN.

15m:
FK8DZ, KH6KV, KP4EDL, LU9HBJ, OH1BG, PY1ZAE, XE1EFT and YJ8VU

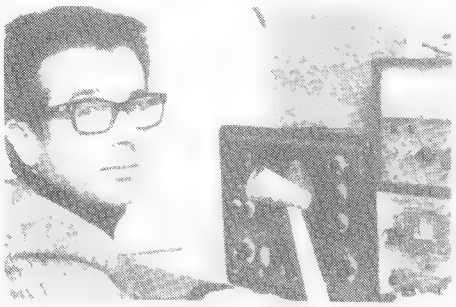
10m:
RA9UMD, UK0CBE, UV0JM, VS6IC and ZC4YC

QSLers OF THE MONTH

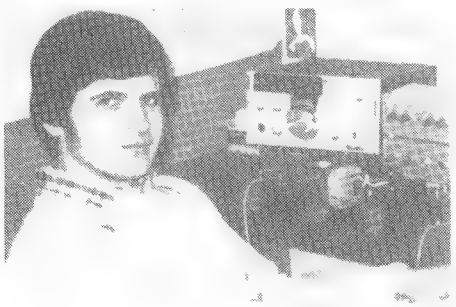
ALL 30m:
G3BDQ, P29DH, ZL1MQ, ZL3NE and 4U1ITU ■

Faces Behind the Key and Microphone

Doug NC3ACU

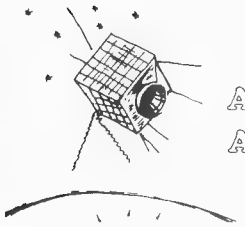


Vince 10SXV



Hannu OH1XX

Join a NEW MEMBER NOW!



AMSAT AUSTRALIA

CORRESPONDENT:

R. C. ARNOLD VK3ZBB
41 Grammar Street, Strathmore 3041.

CO-ORDINATOR:

C. J. ROBINSON VK3ACR.

CORRESPONDENTS:

VK2RX, VK3KF, VK3KW, VK3YQX, VK4PJ, VK4ZJX, VK5HI, VK5AGR, VK7PF.

Nets are conducted as follows:—

AMSAT-AUSTRALIA: Chas VK3ACR, Sundays and other unscheduled evenings 1000Z, 3680kHz Winter, 7064 kHz Summer.

AMSAT PACIFIC: Hari JA1ANG Sunday 1100Z, 14305 kHz.

AMSAT SW PACIFIC: Bud W6CG Saturday 2200Z, 28880 kHz.

INFO

Satellite information is contained in the regular RTTY broadcasts from WIAW.

Participants in the AMSAT-Australia net now cover all call areas except VK8 and VK9.

ORBITAL INFORMATION AS AT 20th FEBRUARY 1982

Satellite	Reference Orbit			Orbit Period Mins.	Angular Increment °W
	Orb. No.	Eqx. Z	Eqx. °W		
AO8	20194	0025.01	74.68	103.179	25.797
UO9	2064	0023.58	140.06	95.211	23.809
RS3	785	0115.85	204.27	118.519	29.756
RS4	779	0042.60	276.28	119.395	29.976
RS5	778	0047.56	277.43	119.955	30.016
RS6	784	0148.98	293.45	118.718	29.806
RS7	780	0007.27	267.60	119.196	29.926
RS8	777	0131.43	288.34	119.765	30.068

Time shown as Hours, Minutes, Decimal of Minute..

SATELLITE STATUS

AMSAT OSCAR 8

Working satisfactorily. Some "mode jumping" has been noticed due to experimentation by Command Stations.

UOSAT OSCAR 9

Still in the evaluation phase. The beacon on 435.025 has been activated from time to time.

RS SERIES 3-8

Working satisfactorily. Some unusual frequency changes occur from time to time which leads us to believe there are more experiments aboard these satellites than have been demonstrated to date. (Watch out for May Day or similar festival for some new occurrence!)

Although no one has written to correct the information given in AR for February, I believe the following to be up to date:—

Satelite	Beacon	Transponder		Robot	
		Up	Down	Up	Down
RS3	29.320	None		None	
RS4	29.360	None		None	
RS5	29.41	145.91-145.95	29.41-29.45	145.826	29.331
	29.45				
RS6	29.41	145.91-145.95	29.41-29.45	None	
	29.45				
RS7	29.34	145.96-146.00	29.46-29.50	145.835	29.341
	29.50				
RS8	29.46	145.96-146.00	29.46-29.50	None	
	29.50				

EXPERIMENTAL MODULES

Spacecraft Microcomupters (Tony Jeans G8ONO, Chris Haynes, UOS/AMSAT-UK)

High Level Software (Dr. Karl Meinzer, AMSAT-DL, Robin Gape, Chris Trayner, AMSAT-UK)

There are two powerful on-board microcomputers which have access to the s/c experiments, telemetry and command systems, enabling:—

Telemetry surveillance and command and status management.

Experiment data storage and processing.

Dissemination of orbital data, operating schedules and spacecraft news.

Closed-loop attitude control employing the magnetorquers.

The primary s/c computer is based around the RCA 1802 microprocessor and supports 8 parallel ports, 2 serial ports and 16k bytes of d.r.a.m. memory with access to a further 32k bytes of d.r.a.m. memory in the Video Display Experiment. The parallel ports interface directly to the Telemetry and Command systems and to the Radiation, Magnetometer and Speech Synthesiser experiments allowing high speed sampling of data. The two serial ports provide redundant data paths and can also generate a wide range of data formats and rates available to the Data Beacons. It is anticipated that this computer will support the multi-tasking software system — IPS — developed by Karl Meinzer and will provide a useful opportunity to evaluate IPS before the launch of the AMSAT Phase III communications satellites.

The secondary s/c computers based around the Ferranti F100L microprocessor and is configured as a minimum system with serial interfaces to the s/c telemetry and command systems. This does however allow the computer less direct but complete access to the s/c systems. The computer has 2 serial input/output ports and is supported with 32k bytes of cmos static r.a.m. The F100L computer is a 16 bit machine.

The software and accompanying data for both computers are loaded from the ground via the Telecommand link and can be modified or replaced during flight by a Ground Command Station in order to accommodate changes in the mission profile and to allow for the rectification of possible in-flight software or hardware failures.

Attitude Stabilisation and Control:

Two magnetorquer coils mounted on the +y, —y axes of the s/c will provide control over the attitude of the s/c by interaction with the earth's magnetic field, whilst after the initial manoeuvres using the magnetorquers, a 50 foot boom with a 2.5 kg tip mass will be deployed to provide passive stabilisation resulting from gravity gradient forces. The magnetorquer will then be used intermittently to dampen nutation and libration. The magnetorquer produced a field of approximately 50 amp turns per m^2 (50,000 pole.cms), allowing a maximum acceleration of the s/c of 1

degree/sec/100 sec. The gravity gradient stabilisation should maintain the —z facet (bottom) o fthe s/c pointing towards the centre of the earth — important for the Camera Expt! The s/c will spin around the z-axis at a very slow rate — around 0.01 r.p.m.

HF Beacons Experiment (Colin Smithers G4CWH, UOS/AMSAT-UK)

Phase-related beacons on 7.050 MHz, 14.002 MHz, 21.002 MHz and 29.510 MHz will support a wide range of ionospheric experiments and observations. The four beacons are each derived from their own crystal oscillator and can be operated independently, however a synthesiser network enables the 14, 21 and 29 MHz oscillators to be phase-related to the 7 MHz oscillator, thus maintaining a constant phase relationship between all the beacons for trans-ionospheric path analysis. The synthesisers can be turned off allowing the beacons to free-run. The beacons can be modulated (on/off a.m. keying) with Morse code telemetry interspersed with a carrier or a continuous carrier upon ground command. The otuput power of the beacons is 100 mW each with a total experiment power consumption of 1.4 watts DC. The 50 foot stabilisation boom will be exited by the HF dipole antennas and should result in a strong radiated signal even at the lower frequencies.

Radiation Detectors Experiment (D. R. Lepine, Appleton Laboratories, UK, Ian Ferebee G6BTU, UOS/AMSAT-UK)

The radiation monitors experiment employs two LND type Geiger-Mueller tubes to measure integrated fluxes of electrons above threshold energies of approximately 20 and 40 keV. The tubes have thin mica end-windows of thickness 9.35 ± 0.05 mg/cm^2 respectively, and are filled with neon together with a small quantity of halogen to provide quenching. In addition to detecting electrons the tubes also detect protons of approximately twenty times higher energy.

Each tube is contained in a separate housing which also contains a thick-film pulse-amplifier/pulse-shaper to provide 10V 50US pulses to the on-board data handling system. A single high voltage converter, generating 560V and stabilised to ± 20V (—40 to +60°C), provides the anode supply for the tubes. A collimator consisting of two circular apertures separated by an 8 mm spacer, is located in front of the tube to define the geometry-factor.

Data from the experiment will be telemetered to ground using two separate formats. High time resolution data, where each detector is sampled for ten 0.05s periods every 1s, will be stored by the on-board primary microcomputer and then transmitted to the ground "on command" using one of the general or engineering data beacons. It is proposed to schedule the experiment so that the data accumulation phase corresponds to the satellite passing over the more interesting precipitation regions, i.e. the auroral oval and polar caps. The exact quantity of data that can be stored during a pass has still to be determined. In addition to high time resolution data for the computer, the experiment also averages the count in every 5s period and makes the result available to the telemetry system where it is transmitted in real time. It is hoped that this feature will be made available on a continuous basis.

Instruments of this type have been used by the RAL Magnetospheric-Plasmas Group on several sounding rocket flights to measure the intensities of electrons producing auroral displays.

Magnetometer Experiment (Dr. Mario Acunia, AMSAT-USA)

A three-axis, multi-range, fluxgate magnetometer will allow the detection and monitoring of geomagnetic storms and their possible effects on radio propagation as well as the study and mapping of the main geomagnetic field, thus providing amateurs with advanced diagnostic and study capabilities. Special emphasis will be placed on the acquisition of real-time and stored data over the polar regions. The basic dynamic range of the magnetometer instrument is + 8000 nT and the output is digitised by a 12-bit A/D converter. Since the strength of the geomagnetic field is approximately 30,000 nT at the equator and 60,000 nT at the poles, the basic range of the magnetometer is increased to 64,000 nT by biasing the zero level in 16 steps.

Dynamic range: ± 8,000 nT.

Resolution: ± 2 nT.

Zero level stability:
Sensors (—60°C to +60°C): ± 5 nT.
Electronics (—20°C to +50°C): ± 2 nT.

Linearity errors: < 2 x 10^5.

Bias Field Generator:
Dynamic range: ±64,000 nT.
Quantisation step: 8,000 nT.
Temperature coefficient: 2 ppm/°C.

Power consumption: 500 mW.

Two outputs are presented for each axis — "coarse" and "fine" — and the full resolution data are available to the primary s/c computer, whilst quick-look data are reduced to 10-bit resolution and presented to the analogue telemetry system with a resulting maximum resolution of ± 8 nT.

CCD Camera Imaging Experiment (Dr. Paul Traynar, UOS/AMSAT-UK)

A two dimensional, charge-coupled device imaging array (GEC MA357) is mounted in the bottom (—z) of the s/c central column which, using the gravity gradient stabilisation mechanism, should point towards the centre of the earth and provide images of land, sea and cloud over a 500 x 500 km area of the earth's surface. The image is formed by integrating the amount of light falling on the 65,536 (organised as 256 x 256) light sensitive "buckets" of the array over a set period of time and then transferring the resulting accumulated charge into a similar, masked storage area alongside. The integration time of the ccd is under ground control via the command system and can be set to any of 16 preset periods between 4ms and 16ms. The spectral response of the CCD is in the visible/red range and should give good haze penetration. The charge "image" in the ccd storage area is then digitised into 4-bit words (each word representing a pixel), and transferred once more to a long-term memory in the Video Display Experiment module. The data now resident in the VDE memory can be transmitted to ground stations at 1200 bps (phase-synchronous a.f.s.k.) through the General or Engineering Data Beacons. The image data is transmitted in a line synchronous manner, i.e. 256 x 4 bits are sent (representing one line ofr image) in one continuous stream preceded by a "line sync" bit pattern comprising a 32-bit code sequence. The 32-bit code itself comprises an 8-bit word and its one's compliment repeated twice. The complete image dump will take approximately 3.5 minutes from the s/c and comprises:

A frame header comprising one line of 16 line sync. codes.

256 lines of 1024 bits (organised as 256 x 4 bits) each preceded by a line sync. code.

The "line sync." code format is:—
"0101101110100100 0101101110100100".

The primary s/c computer has direct access to the VDE memory and it may be possible to carry out on-board processing and annotation.

Lens characteristics:
Focal length: 6.5 mm.
Speed: 1 : 1.8.
Aperture: 1.5 mm f/4.
Neutral density filter: 1/32.

Field of view: 60 degrees.

CCD intensity dynamic range: 35 dB.

CCD vertical transfer clock rate: 6.6 MHz 3-phase.

CCD frametransfer clock rate: 2 MHz.

Power consumption:
Imaging: 1.5 watts (for 1 second).
Store/readout: 2.8 watts continuous.

Tube	*LND705*	*LND710*
Approx. energy threshold (KeV)	20	60
Window thickness (mg/cm^2)	0.35 ± 0.05	7.75 ± 0.25
Geometric factor (mm^2 ster.)	0.08	0.35
Collimator dia.	8.0 mm	8.0 mm
Angle to s/c z-axis	13°	18°
Filling gas	neon + halogen	neon + halogen
Operating temperature	—50 to +150°C	—50 to +150°C
Sampling rates:		
Stored data	10 per sec	10 per sec
Real time data	8 sec	8 sec

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

Margaret Loft VK3DML
28 Lawrence Street, Castlemaine 3450

ALARA CONTEST

The results of our 1st contest were very pleasing to the committee and we extend our thanks to all who participated, especially the OM's, but next year we would love to get more logs from you. 51 logs were received this time, 30 from ALARA members; 10 YL non-members; 10 OM's.

RESULTS

TOP SCORE (ALARA members) in VK call areas: VK2DYL—Geraldine; (club stn) VK2SU—Freda (certificate awarded as we felt a club call was ineligible for cert.). VK3KS—Mavis; also top VK score. VK4-VCE—Margaret; VK5QO—Marlene; VK6-KYL—Diane; also top VK Novice score; VK7HD—Helene.

Top score ALARA member DX countries: ZL2QY—Pearl; P29NSF—Siegi; WA3HUP—Mary Anne; VE7CBK—Bobby; G4EZI—Diana; DJ0EK—Paula; PA3ADR—Agnes.

YL Non-members top score in each Continent: VK3DJN—Jean; ZL1BIZ—Elva; WA2NFY—Lia; DJ2YL—Susy.

OM's top score in each Continent: VK3XB—Ivor; ZL3RK—Mac; N6ARR—Dave; SWL VK4 L40018—Charles.

Thank you once again to all who made the contest so successful and look forward to hearing from you all again after contest number two on November 13th.

CONSTITUTION

The Constitution was discussed on the meeting held on Monday night, 22nd Feb. with 14 members present on the net. All states VK2 to VK7 represented.

All points of the Constitution were agreed on by those present and legal advice is being sought before it is adopted. Congratulations were extended to Geraldine for her control of the meetings on air, it isn't easy, I know, but well done. Good luck, too, in the AOCP class, Geraldine, and to anyone else who is studying for exams.

NEW CALLS

New Callsigns: VK4BSQ ex VK4NBA—Wendy; VK4KAU ex VK4VCE—Margaret; and VK7ZYL—Joan; nice to have you on the net, Joan, and thanks to OM Peter for making it possible.

MEETING PEOPLE

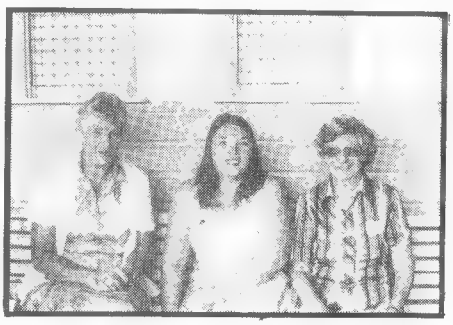
On Sunday I attended the Midland Zone convention and met Judy VK3VBP, from Myrtleford; also met others I had spoken to on air. It was a most enjoyable day and the weather was glorious.

Remember, the next meeting of ALARA will be on Monday, March 22nd (4th Monday); my apologies for the wrong date in last month's column. 3570-+qrm at 1030 Z.

Valda, our treasurer, has been kept busy with subscriptions coming in and also in waiting to hear from girls wanting to join ALARA. Address is VK3VKT Ms V. Trenberth, c/- P.O. Church St., Brighton, so please write to Valda and a copy of ALARA's information sheet will be forwarded to you.

Until next month, good luck to all and take care.

Margaret Loft VK3DML ■



L. to r.: Joyce VK2DIX, Geraldine VK2NQI, Margaret VK2AND, taken at Gosford Field Day.

A MOTHER'S PRAYER IN THE MORNING

Thank you, Lord, for this glorious day.

Bless the carpet beneath my feet and the bombardment of hot and cold water that freshens my waking skin.

Bless the breakfast I am cooking for my family, and the special music of morning around me . . . doors banging, the clatter of forks and plates, the rattle of lunch boxes, children demanding "mother!"

Thank you for my healthy, available presence that is able to cope with them.

Bless the husband who provides all this. Be with him as he sets off for work; fill him with a sense of his own worth and achievement, enrich and enliven his day.

Bless the school buses and their drivers, let them transport our children safely.

Bless the teachers and that marvellous institution that claims my offspring for the important hours. Please let them be good there, happy there, bright and able to grasp the lessons there, and oh, thank you that they're well enough to be there.

Now bless this quiet house . . . even its confusions and disorder which speaks so vividly of its quality of life. Thank you that I have the time and strength to straighten it.

And thank you for the freedom to sit down with a cup of coffee before I begin.

from "I've Got To Talk To Somebody".

(VK1 DIVISION)

VK1 ANNUAL GENERAL MEETING

The Annual General Meeting of the VKI Division was held on Monday, 22nd February.

The election of office-bearers for 1982 resulted as follows:

President:
Bill Maxwell VK1MX
Senior Vice-President:
Fred Robertson-Mudie VK1MM
Vice-President:
Ian Coleman VK1KIC
Secretary:
Richard Jenkins VK1UE
Treasurer:
Kevin Olds VK1OK
Committee:
Gavin Berger VK1NEB
Alan Hawes VK1KAL
Barry Bennetts VK1BB
Federal Councillor:
Ron Henderson VK1RH

VK1 WICEN ARRANGEMENTS

As the present list of volunteers to participate in WICEN activities has been found to be unworkable, it has been decided to discontinue use of this list and to set up a new list of operators KNOWN to be available for WICEN activities.

It is also intended to conduct a minimum of three WICEN activties annually:

— A training exercise such as the coverage of the National Junior Tennis Championships.

— A public relations type exercise intended to expose th WICEN group to public view; e.g.: an activity connected with the Canberra Week activties.

— An unannounced "Emergency Call-out" of volunteers on the list to check their availability, equipment, etc.

The VK1 WICEN co-ordinators are Rob VK1ZAI, Dick VK1ZAH and Ian VK1ZAG.

10/10 INTERNATIONAL IN VK1

It might come as a surprise to many VK1 members to know that there is a local chapter of the 10/10 International Radio Net in VK1.

This group, known as the Australian Capital Chapter, meets on air on 28.585 MHz each Saturday morning at 2300 Z.

Although there are many other 10/10 Chapters world-wide the Australian Capital Chapter is one of the few that uses the Novice segment of the 28 MHz band.

The local Certificate Manager is:

John VK1KJC (QTHR) or PO Box 36, Cook 2614, A.C.T.

73 DE VK1KV ■

If you have let your WIA membership lapse in the past year or two, why not seek reinstatement now — just look at what you are missing.

LETTERS TO THE EDITOR

8/9 Glenroy Road, Hawthorn 3122
11/2/82

The Editor,
Dear Sir,

I have just purchased a copy of the 1981/82 Call Book and wish to congratulate the Editor and all concerned for the excellent production. It contains much information I have not seen published previously. I intend sending a copy to a Swedish amateur friend whom I am sure will find it most interesting.

Once again, congratulations!

73. Jack Dunne VK3AXQ. ■

36 Nixon Crescent, Wagga Wagga, 2650
15th February, 1982

The Editor,
Dear Sir,

Many things are written about Morse Code. May I quote my mentor — VK2YA — "I can show you, but I can't learn it for you", you will agree with that, I'm sure. Maybe you have tried, and tried, and then given up, as I did — so now we're even, O.K.! You may have age on your side (an advantage), I'm 40-odd years young.

Let me tell you how I beat it, it may help you — try the same tricks, perhaps. I learnt the letters and numbers in about 10 days, at work, on bits of paper, translating anything and everything into Morse. Then I progressed to 5 W.P.M. tapes. Night after night for four months, then an exam, sending was a breeze, receiving a disaster — I managed two words — THE and SEPTEMBER. Was informed that I had failed — does that sound familiar?

Now the good news. I left Morse alone, unheard for eight months, not a sound — but, you know, it's a bit like swimming — once learnt never forgotten. Last August, I began boning-up on Morse again but with one MAJOR difference — I used head-phones for receiving, and I used tapes with a Verbal repeat. The advantage was that when I got stuck I could find a word and marry the sound to it. If you don't use phones you put yourself at a disadvantage; it is something else you have to contend with at exam. time.

I don't claim to be a Morse expert, far from it, but this was my recipe. And I owe thanks to Rex and W.A.R.C.

VK2PGE ■

388 Huntriss Rd., Woodlands
16th February, 1982

The Editor,
Dear Sir,

Re the UN-DU Award as per the Award Manager's article in Feb. A.R., I would like to describe my "adventures in certificate hunting" for this award:

At last I have my QSL Cards returned after making application for the UN-DO award to P.A.R.A. But to start at the beginning: In August, '80, the first application and packet of cards were despatched by airmail to Manila, followed by a second packet in Nov., '80. During April, '81, my certificate No. 11 arrived. But it took till Jan., '82 for my QSL cards to arrive back here in Perth, in a tattered packet, patched up by Aust. Post.

The certificate is large, 500 mm by 400 mm (19.7 x 15.8 ins.) and required folding four times to fit into the A4 size envelope. Due to the parchment type material used, it is almost impossible to remove the creases caused by folding. A mailing tube, large diameter, is needed instead of an envelope. My DXCC is almost 300, but I, too, have about 30 flags missing, and only one gold star is stuck on instead of five (5).

The Awards Manager suggests buying a world map containing the correct size flags to stick on in place of those which are missing. One could do the same thing with the missing gold stars, too. If it comes to that, why not send $12 US, and just ask for a signed certificate without flags and stars and stick the flags on yourself as you work the country?

Neil VK6NE ■

Similar problems with several other YL's and self with this award. I concur.

Gillian (Jill) Weaver VK6YL

5 Lockhart Court, Kilsyth, Vic. 3137
17/1/82

The Editor,
Dear Sir,

I read with interest Bill Verrall's (VK5WV) columns in December 1981 and January 1982 re awards and QSLs, etc.

In 1969 I started out on the 5B DXCC and concentrated mainly on 7 MHz. Having 100 countries CFD on 7, one day I'll do the necessary to get the piece of paper. I don't think I'll bother with the other four bands for the 5B DXCC now!

At one time back in the early days of radio, when blokes could only afford 5, 10 or 20 watts input to a home-brew rig, a HB Rx and a doublet fed with a bit of twisted lamp cord, getting 100 new countries confirmed was sure an achievement. These days the achievement seems to be to pile on the watts and the antenna gain (nothing wrong with the latter) to get through the dog piles. They have all these nets and lists; to me it seems to be so much rat race. I prefer to fire forth a CQ DX and work whoever comes back first for the sheer pleasure of it, and if a new country or something a bit different comes back all the better. Sometimes one can listen to a dog pile for half an hour and still not know who the target station is. Some of these DXpeditioners must be too ashamed of their call signs to identify!

IRCs for a direct QSL and to offset the cost of direct QSLing is understandable, but what are these green stamps? Surely not $20 bills! If so, I'm shocked! Maybe I shouldn't even suggest such a thing! Professional QRMers, policemen and carrier droppers don't even deserve a comment. Neither do half the S9 reports!

For those sincerely chasing an award, QSLs are a good thing if the info on them is correct. Sometimes info on QSLs is not correct, so what' their use? Maybe certified log entries is really the best thing after all.

Some awards will probably always require QSLs. For those wanting cards for these awards, or for any other reason, they should be able to say "Pse QSL" in the QSO and rely on getting one. You hear all sorts of indistinct statements: "QSL OK", "Will QSL", "QSL", "QSL via the Bureau", all of which could mean anything! In many cases the operator who makes these statements couldn't care less if he received your card or not and only QSLs out of courtesy upon receipt of a card. Surely this results in lots of cards going through the bureaux unnecessarily. If someone says "Pse QSL" you can bet your life he really wants it. Haven't you ever cursed yourself for forgetting to say "Pse QSL via Bureau" when working a new country? "Pse QSL" is a precise request, so write one out for him on the spot! Forget the rest, except those you request a card from, of course.

This may see harsh, but would result in a lot less work for QSL managers and for the amateur in his own shack.

73. Dave Jenkin VK3ABR. ■

52 Cokeham Road, Sompting, West Sussex, BN15 OAE, England.
30th November, 1981

The Editor,
Dear Sir,

I have intended to write sooner but I have been somewhat unsettled, having returned to live in the UK, and have only just had access to the info necessary for this letter.

I wrote "The Even Simpler Regulator" article as VK2BXF, and it was published in AR some many months ago.

Since then I have heard from Bruce VK3BM in Swan Hill and he has done quite a lot of research during constructing a 25A unit.

His source of 2N3055 devices had a wide range of hfe, so much so, that the current was not evenly shared between the transistors. He ended up using a transistor tester to select 2N3055s of matching hfe and that solved the problem.

So I thought it would be a good idea to mention the matter in AR in case others are having "one" transistor making all the heat!

I have not experienced the problem, perhaps because I have used "good name" transistors — such as Motorola from "Tandy".

I have heard of several regulators up and running successfully, so the article seems to have been accepted very well.
73 es health. Denzil Roden G3KXF, ex VK2BXF.

■

28 Redgrave Road, Normanhurst, NSW 2076
7/1/1982

The Editor,
Dear Sir,

It is now time the amateur radio organisations world-wide consider our tradition of using USB above 10 MHz and LSB below 10 MHz. For those who have been recently licensed the reasons for these practises are perhaps not apparent. When amateur radio was developing the techniques of constructing stable variable frequency transmitters for single sideband suppressed carrier transmissions most equipment generated the SSB at around 9 MHz. This meant that one VFO range gave both 80 metres and 20 metres, virtually the only bands where there was any SSB activity.

Naturally this meant that we had opposite sidebands on each band, and so the tradition persisted.

I believe that we should consider using USB on all bands for the following reasons:—

All commercial usage is USB.

And secondhand transceivers that become available from military or commercial sources will be USB.

WICEN compatibility with military and SES equipment will be enhanced. Already WICEN in NSW has had to work a military helicopter on 80m USB in an exercise.

A small saving would be made in the manufacture of amateur equipment.

73. Barry White VK2AAB. ■

19 Wallis Ave., Tonkley, 2263
20th February, 1982

The Editor,
Dear Sir,

In this age of Eco-nuts, Uranium nuts and Cocoanuts we now have a new type — the hand held nut. Whilst not denying the great versatility of these and I must admit to even owning one, they are designed for a different purpose than that which attracts the Hand Held Nut.

Firstly, try the local repeaters and your friends simplex. Then, try those repeaters that you normally work with with at least 10 watts and a beam. Find a spot where you can hear the repeater and then arrange with a friend with another hand held, preferably mobile, to work him on a Sat. afternoon on the day that the local club has its Field Day or Zone Convention. Spend all afternoon finding good (?) spots to work each other.

Furthermore, always stay on the repeater for at least 3 hours. Never use any antennae except the 'Rubber Ducky'. Let your mobile rigs, 5/8th, afterburners and beams gather dust. If you reach Readability 3 move and find another weak spot. Finally, let your nicads run down and leave the set on low power.

Further refinements include continued button pushing, lack of call signs. Keep the car window down at 100 k.p.h. and at the end of the day soundly abuse on air the repeater for its deafness, lack of power and proneness to superimpose noise on weak sigs. After all, the designers were a bunch of incompetents!

J. R. Saunders VK2BNY ■

6/41 Alphington Street, Alphington, Vic. 3078
31st January, 1982

The Editor,
Dear Sir,

Firstly may I congratulate the WIA on the excellent Sunday morning broadcasts.

It is a pity that in recent weeks part of the broadcast has been spoilt by malicious interference.

I do feel, however, that many amateurs who listen to the broadcast may be making the situation worse by commenting on the interference on the channel 5 repeater (VK3RMM) during the call-back. This only seems to give the person who is causing the interference the satisfaction of knowing that they have achieved their objective of disrupting the broadcast.

In the UK we have the same type of problem on many of our repeaters. There we either completely ignore the interference, in which case the person causing it eventually gives up thinking they have causing it eventually gives up, thinking they have been unsuccessful in their jamming, or a group of operators will QSY to an obscure simplex channel and track down the source of the interference, taking appropriate action when they find it.

I am sure that if either or both the above actions were followed in the Melbourne area the problem would be reduced in a short time.

Yours faithfully,

Neil J. Underwood VK3DHJ/G4LDR ■

QSP

STAMP COLLECTORS

The International Magazine and Club for Radio Amateur Philatelists are trying to start an international club for Radio Amateurs that also have the hobby of Stamp Collection. A magazine "Ham-Stamps" will be published quarterly with the first edition due in April/May, 1982.

The Club is looking for a co-ordinating Radio Amateur/Philatelist in each country, also membership is now open. Annual subscription is $5.00 US or 20 IRCs sent to: LA5NM. M. Bjerrang, Box 210, N-9401 Harstad, NORWAY. For any further information and a general newsletter send 3 IRCs to LA5NM.

The first two people to send their membership fee will receive a special envelope with a map of Artic areas, special cachets, Norwegian stamps and an envelope postmarked at one of the three visited polar bases which the Norwegian Artic radio amateur expendition operated from in 1981 (value $2.50 US).

A few amateurs with an interest in stamp collecting are M1C, ZD8TC, JX7FD, JW5NM, JW2CF, G3NBC, LA7RB, SM6CYZ, K0BJ, KA7DBA, OZ8KW, LA8CE, JW9QH, LA6OM, LA3EU. ■

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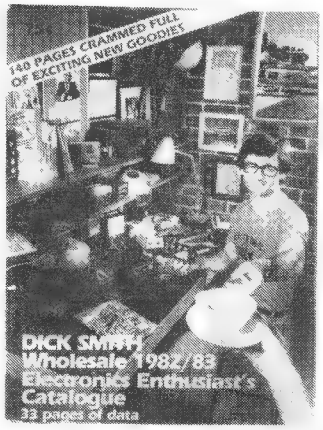

DSE/A248/LM

WIA

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★

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ARRL Course in Radio Fundamentals	$4.70	(260g)
DOC Regulations Handbook	$3.60	(230g)
RSGB TVI Manual	$3.40	(140g)
AARRL Weekend Projects	$3.70	(150g)
ARRL Antenna Book	$5.70	(510g)
All about Cubical Quads, Orr	$4.60	(150g)

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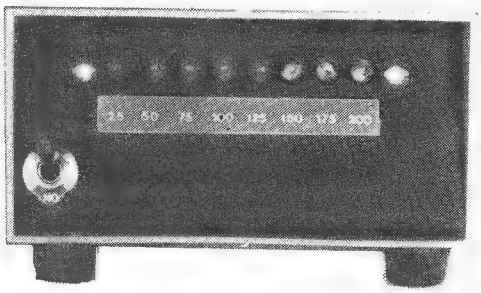

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SILENT KEYS

It is with deep regret that we record the passing of —

Mr. EDGAR WAGNER	G3BID
Mr. R. C. B. LILLIE	VK2QG
Dr. A. M. MYERS	VK5AMY

OBITUARY

Dr. ARTHUR MYERS VK5AMY
Born 28th April, 1910

Merv or "Doc" as we knew him, was a G P. in Victor Harbor, South Australia, from 1957 to 1st February, 1982, the day of his passing — he died at the operating desk while working a Greek station.

Prior to going to Victor Harbour he operated a general practice in Peterborough in the north of South Australia from 1938-1957 during which time he spent four years in the Army as M.O. at Wayville & Cook in South Australia.

From 1930 he was very interested in short wave listening and reporting — in the latter part of 1978 he became interested in Ham Radio. Hugo VK5BC, Jack VK5LR and I exerted some "slight pressure" on Doc to "have a go". This he did with the following resutls:

Passed Novice Exam 2nd February, 1979.
Passed Limited Exam 19th Feb., 1980.
Passed A.O C.P. Exam 10th August, 1980 — then aged 70 years.

He was active on all HF Bands, 80 to 10, also 2 metres. He worked a great number of DX countries on 20, 15 and 10 metres in the short time available to him.

A well read and learned man with a keen sense of humour, he will be sadly missed by those of us who knew him.

Our thoughts are with his wife, Margaret (Peg) and family.

Bon voyage, Doc.

Bill VK5XB

EMC

(Electro Magnetic Compatibility)

If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO

VK3QQ,
Federal EMC Co-ordinator, QTHR.

HAMADS

- Eight lines free to all WIA members. $9 per 10 words minimum for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means address is correct as set out in the WIA current Call Book.

FOR SALE

Linear Yaesu FL110, suit FT7 C & C, $220; Hygain TH3 mark 3 HF triband yagi with BN86 balun, $240. Ph. (03) 465 2991.

Realistic DX 200 Communication Rx, 5 band, 150-400 kHz and 520 kHz-30 MHz, CW and SSB signals, with manual, good cond., $150. L31187, QTHR. Ph. (03) 277 1874.

Pye Victor FM Low Band Txcvr., v.g.c., easy to mod. for 52 MHz, AC power supply; Pye type PS 728 240V AC to adjustable 12-14 V DC regulated output, excellent cond., $25; AWA carphone, type MR-10C, mod. for 52 MHz, less xtals, c/w trans., PS speaker, cables, etc., v.g.c., $15; AWA remote control unit, type 1A, to suit BS-50 base units, internal PS speaker and handset, excellent cond., $10; licensed amateurs only. VK3EM, QTHR. Ph. (03) 578-7745.

TH6DXX Triband Yagi by Hygain, new in carton, $395. VK3SP, QTHR. Ph. (03) 842 1841.

Yaesu FT207R(A) Hand-held 2m Txcvr., only a few months old, used as rx only, orig. packing, handbook, charger, etc., $250. VK2VHQ, QTHR. Ph. (02) 525 7206.

Icom 701 with power supply, IC701PS, handbook, exc. cond., orig. packing, no mods., $860, ONO. VK3KCW, QTHR. Ph. (03) 329 0016 Bus., (03) 277 7330.

Kenwood TS820S Tx, dig. readout, CW xtal fitted, fact. mod. for novice power, hand mic., absolutely immaculate cond., $750 firm, no offers. VK3VMO, QTHR. Ph. (053) 32 7569 evenings or weekends.

Icom 22S, 12 mth. old, not used MOB, $220. VK3AKU, QTHR. Ph. (03) 792 9587.

Video Recorder (b/w), Sony AV-3600CE, with two blank 70 min. Sony tapes, one empty reel, plus a full original service manual, working, very good cond., $170. VK2ZET, QTHR. Ph. (02) 85 4640 AH.

TR9000 2m Multi-mode Txcvr., $500, ONO; 28 MHz to 432 MHz (2 MHz) microwave modules transverter, $180, ONO; AR22L ant. rotator, $80, ONO, or swap all of above for Tono 700E or similar equipment. VK5ATB, QTHR.

Drake TR-4C, RV-4C remote VFO/PS, v.g.c., $525; Kenwood TS600 6m Txcvr., new, $475; Icom IC502A 6m Txcvr., good cond., $150; microwave modules MMT432/28, 432 MHz to 436 MHz, v.g.c., $200; Realistic AX190 amateur band Rx., v.g.c., $100. VK4ZRF, QTHR. Ph. (07) 349 1488 AH.

Generator, portable Honda EM300, good working order, quiet, runs Uniden 2020, $300, ONO. Peter VK3ANX, YTHR.

Icom IC701 HP Txcrv., all solid state, mint. cond., mic., no mods., manual, $750; Cushcraft 2m ringo ranger II antenna, improved version, 7 dB gain, new, $65. VK3RD, QTHR. Ph. (03) 579 5272.

Pye Transceiver MTR1, in steel case, with mic., key and instruction book, also AWA Forestphone. $150 the lot; Yaesu FT101Z, as new cond., never Tx, with DC-DC inverter, fan, mic., and antenna tuner, FC901, $800, or exchange for Yaesu 7700/SW with attachments. H. Beaconsfall, 41 Howitt Road, Caulfie'd. Ph. (03) 528 5090.

Final Unit of Station of late VK2AMQ: IC22A 2m Tx/Rx and matching power supply, IC3PA xtals for repeaters 3, 4, 5, 6, 8, simplex 40, 50, good cond., $100. Mrs. Haining. Ph. (02) 649 5665 (Saturday only).

Yaesu FR101 Rx, 1.8 MHz to 30 MHz, 21 bands, plus 2 and 6m, AM, FM, SSB, CW/N, CW/W, RTTY, carton, manuals, $525; Scalar mobile triband antenna, complete 10, 15, 20, 40, 80m resonators, $65; MFJ 160-10 long wire tuner, $20; Kenwood TR2400 2m h/held, complete, manuals, charger, carton, $250; Yaesu world ham clock, $20; Ameco PT-2 receive pre-amp., 1.8 to 54 MHz, $35; Tech TE 15 GDO, $25. Ph. (02) 57 4648.

Icom IC290A 2m multi-mode, hardly used, mint cond., $500; Icom IC202 SSB, with Oscar xtals, $150; Chirnside duoband yagi, 10-15m, $90; 2m ringo, never used, cost $60, sell $45; 2m yagi, 13 elements, wide spaced, 16.1 dB gain, $35; Crown antenna rotator with cable, $80. VK3XAP. Ph. (03) 288 4714 AH.

Anadex DP 8000 fast line printer, serial or parallel input, $610. Mark Webster VK2BAK, QTHR. Ph. (02) 487 1299.

Kenwood TS520 AC/DC, 27 MHz crystal, fitted,, complete with DG 5 digital readout, TS520S external VFO, all with orig. cartons and manuals, new final just fitted and checked by Kenwood, see wo.king, $550; Datong Morse tutor, $95. VK2DUI, QTHR. Ph. (02) 337 5896.

Swan 350 Txcvr and Power Supply, covers from 10 to 80 metres, includes handbook, perfect cond., $300. VK4VCX, QTHR. Phone (074) 62 1606 (AH), ask for Peter.

Teletype No. 15 Printer, $55; Teletype No. 14 Tape Perforator Printer, $35; Teletype No. 14 Tape Reader, $25; Demodulator, $25 VK3AYM, QTHR. Ph. (03) 580 8095.

Storm damaged Antennas: Western DX33 (same as Hygain TH3 Mk 3), all traps ok, director and reflector elements require 1 new alum. section each, boom and driven el. ok, $120. ATN 16 el. 2m long yagi, abt. 7 elements bent or missing, boom, balun and b/band elements ok, $25.00. Buyer to pick up. VK3UV, QTHR. Ph. (03) 580 6424 (AH only).

Shack Clearance. Kenwood TS-120S, mic. and manual, $475. Kenwood TR2400 2m FM with ext. spkr./mic., $235; Galaxy 111 HF SSB txcvr, complete, $150; Yaesu FP2 DC power supply, $30; 160/80/40 AM/CW transmitter, 10W OP with AC PS, $30; Marconi 1155 all band communication receiver, goes well, $50; IC22 crystals, many channels, $10 set; flexi ant. for KEN 202, $5; RF speech processors, KEN KP-12, Daiwa RF440, $60 ea. VK30M, QTHR. Ph. (03) 560 9215.

Marconi Circuit magnification (Q-meter), 15-180 MHz, $125; SP transformer, 240V input, 1100-750-500-0-500-750-1100V out at 500 mA continuous, $45; also considerable stocks of transformer cores, $1/kg; wide-spaced variable capacitors, etc. VK3ASC, QTHR. Ph. (059) 89 5995.

Estate of F. A. Bibby VK3OL: Yaesu F101 txcvr, handbook; Yaesu FT221 txcvr., handbook; Yaesu FTDX570 txcvr., handbook; Yaesu FT50 txcvr.; Tech TE22 audio generator; Sanwa SWG301 test osc.; VTVM; Osker SWR200; multi meter; tape recorder. R to R; CB txcvr., handbook; Yaesu FT2200G VHF txcvr.; AT5 Tx, handbook; AR8 Rx, handbook; BC432 Rx, handbook; CRO; SCR221J freq. meter with AC supply, handbook; audio amp./AM modulator, 2X616; Heathkit TV alignment generator, handbook; YEW 75/150/300 std. voltmeter with O/L protection; box diodes, approx. 150; assorted switches/meters/wire; Drake SSR1 communications Rx, Wadley, handbook; Mast 35' (Hills telescope). Ph. (03) 836 0707.

Deceased Amateur Station (Complete). In mint condition, less than 3 yrs. old. HF txcvr FT101E, includes, Yaesu h/held mic., 901 spkr., YC-601B dig. freq. display counter, Tokyo HC500A ant. coupler, Daiwa CNC20 SWR and power meter, Yaesu YH-55 headphones, Shinwa 100S low pass filter. Hi-Mound HK708 morse key, Tokyo AM5 all-band trapped vert. ant., HB triplex dipole and mast. Complete with all co-ax cables, plugs and instruction manuals, $1250 ONO. Ph. (03) 544 3115 or VK3VAM, QTHR. Ph. (03) 557 6056.

Yaesu FT101ZD (digital readout model), HF txcvr., exc. cond. (has had little use), $650 or make an offer. VK2AZT. Ph. (069) 42 1392.

FT101E and FV101B, exc. cond., $600 ONO; FT101Z, as new, $600 ONO; D104 mic. on G stand, new, $100; Datong auto. RF speech processor, as new, $180; microwave module MML144/25, 144 MHz, linear amp., $90; Hammate thruline wattmeter, Mod. 4360, 1.8 to 30 MHz, made by Bird, $95. VK6NE. Ph. (09) 446 3232.

Yaesu FT501/FP501 Txcvr., 560W PEP, dig. readout, CW filter, Mosfet preamps on 10-15m, $500; R390A with CV157 and CV116B ISB and RTTY adaptors, $1000. VK3AAR, QTHR. Ph. (03) 836 4279.

Yaesu Txcvr with Oscar Block SWR200, microphone YD148, key HK706, as new, in cartons, total price $495. VK2BAL. Ph. (02) 44 4135.

Computer, Dick Smith System 80, with lots of software and books, mint cond., with original packing, etc., $650 ONO. Ph. (086) 292 099, AH (086) 292 174. VK5AS, QTHR.

Collins 6185 100W AM aircraft txcvr., 2-25 MHz, rack, controller, dynamotor and handbook, original cond., $195; Collins R390/391 comm. recvr., modules, RF/IF, $75; IF $75, 1st osc., $50; audio, $75; VFO, $70; calibrator, $25; transformer, $50; R390A VFO, $70. VK3BFB, QTHR. Ph. (03) 583 1638.

Yaesu FT101E AC-DC, exc. cond., RF speech processor, 160-10m, incl. mic., little used, inspection welcome, $580. VK3AOC, QTHR. Ph. (03) 527 7919.

Icom 245 2m FM/SSB Dig. Mobile Txcvr, 10W, $260; Icom 701 HF txcvr. with power supply, $950; Kenwood TS120V HF Nov. txcvr., $380; Yaesu FRG7 .5/30 MHz rcvr., $230; Hy-Gain 18 AVT all band vert., $55. VK2BMR, QTHR. Ph. (02) 639 8643.

Kenwood TR9000 All Mode 2m 10W Mobile Txcvr. with mem. scan, GC, all standard accessories, $450 ONO; pair of Dick Smith 3W 3 channel 27 MHz walkie-talkies in near new cond., best offer. VK4XT, QTHR. Ph. (074) 62 2389.

Shack Clean-Out. Only 2 items remain from my recent clean-out/up-dating — they are: Alda 103 fully solid state HF mobile transceiver with mic. and handbook, covers 80, 40, 20m, SSB and CW, 100W output, 25/100 kHz calib., noise blanker, this unit has been a faithful performer and is 4 yrs. old, still in exc. cond. with years of use still left in it (made in USA), a gift at $320. The other item is for you computer buffs: a Radio Shack TRS80 level 2 microcomputer with 48k RAM on board (yes 48k), TV modulator, PSU, some "games" tapes, 3 comprehensive manuals, the unit is 9 mths. old, in as new cond. Reason for sale — I need the cash! A bargain at $850 (equiv. today's retail price is over $1250). VK3UV, QTHR. Ph. (03) 580 6424 (AH only).

TRADE HAMADS

Toroids: Iron powder toroidal cores, ex stock — T44-1, as used in "A REFLECTION COEFFICIENT BRIDGE," QST October 1981, 4 for $2.55; T200-2, balun core, 2 in O.D., $4.29 ea., 2 for $8; T225-2B, a whopper, 2¼ in. O.D., 1 in. HT, bigger than 2 x T200-2, $8.33 ea. All prices above include postpacking. The Australian Acoustic Company, 20-24 Ward Street, Eudunda, SA 5374.

Self-employed Contract Draughtsman, specialising in electronic, electrical, instrumentation, broadcasting circuits and mechanical details, site plans, building layouts, PCB design and artwork (single or double sided or multi-layer), technical writing, etc., ex supervising tech., TOCP, BOCP, 10 years full time drafting experience, all work executed professionally in your Adelaide office or mine. Rates, quotes, samples sent if you enclose large SASE with your enquiry to DQ Communications, PO Box 313, Morpett Vale, SA 5162.

Amidon Ferromagnetic Cores: Large range for all receiver and transmitter applications. For data and price list send 105 x 220 SASE to: R.J. and U.S. Imports, PO Box 157, Mortdale, NSW 2223.

WANTED

Transistors, 1 x 2SA124 and 1 x 2SD65-1 for Sony port. 8-301 TV. VK3AH, QTHR.

RF Power Amplifier Valve, General Electric "Compaction" No. 8950, as used in the final of a Swan Tx "Cygnet" model 300B. VK3BOU, QTHR. Ph. (03) 850 3549.

Tower Wind-up, 80 to 100 ft. write Michael, RMB 2145, Numurkah, 3636. Ph. (058) 62 1965, (058) 62 1705 A.H.

SB620 Heathkit, any cond., details to VK7PF, QTHR. Ph. (003) 44 1345.

Collins R390/391 RF/IF Module Cover and top and bottom cover plates (R390A ok), R390 nameplate, tools. VK3BFB, QTHR. Ph. (03) 583 1638.

Yaesu FT101E Transceiver, in good order. Ph. (08) 384 3471.

Circ. Diag. or Comp. Handbook for C42, set and unit No. 12, also freq. dial film for R210 rx and circ. diag. or handbook for R210, or a complete R210 in working order. L50304, QTHR. Ph. (08) 264 1886.

Trap Vertical Antenna, any type with coil in base. VK2KH, QTHR. Ph. (02) 525 2981.

Creed Teleprinter Handbook (Model 7 Series), copy pages Figs. 61, 69, 70. Instructions Test Set Teletype TS2B/TG, parts. Model 14 T/D. Handbook Model 14 T/Reperforator. Colin Gracie L30060, PO Cavendish 3408.

WANTED TO BUY OR SWAP

Teleprinter Picture Tapes or pictures only. Colin Gracie L30060. PO Cavendish 3408.

EXCHANGE

Kenwood TR9000 All Mode 2m 10W Mobile Txcvr with memory scan, GC, all standard accessories, for small all band HF mobile transceiver like FT7B etc. VK4XT, QTHR. Ph. (074) 62 2389.

TENDERS

Tenders are invited for the sale of the following amateur equipment, ex VK1JS (dec.): KW 2000 sideband txcvr. complete with power supplies and access.; Heathkit HM-11V reflected power meter; TS520S Kenwood txcvr.; DG-5 Kenwood dig. display; TS-700G Kenwood 2m txcvr., each separate. The above items can be inspected by appointment through the Curator, 2nd Floor, National Mutual Centre, Darwin Place, Canberra, between 9 a.m. and 4 p.m. Monday to Friday, or by telephoning (062) 46 1699. Tenders in plain envelope marked "Tenders — Radio Equipment", addressed to the Curator of Estates of Deceased Persons, PO Box 515, Canberra, ACT 2601, to be received no later than 4 p.m. on the 14th May, 1982. The highest or any tender will not necessarily be accepted.

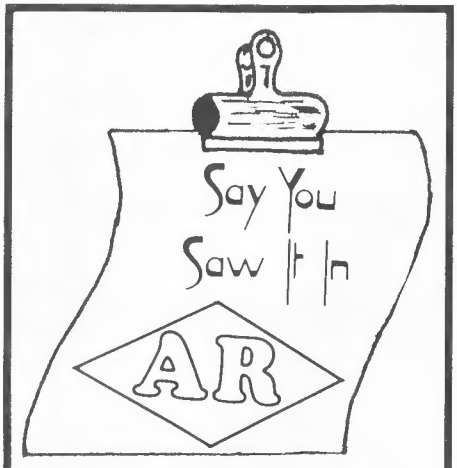
RAFFLE RESULT

Elizabeth Amateur Radio Club Raffle for Kenwood TR2400 drawn 14/2/82, winning ticket No. 52.

BUYING OR SELLING GEAR?

HAMADS

MAKE IT HAPPEN FAST



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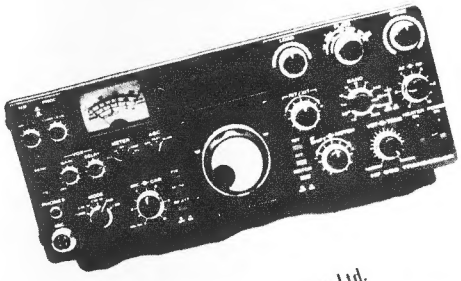
When you buy equipment



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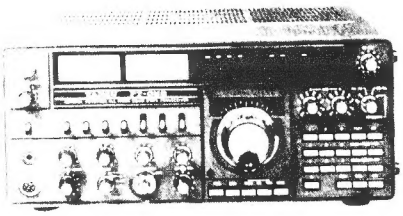

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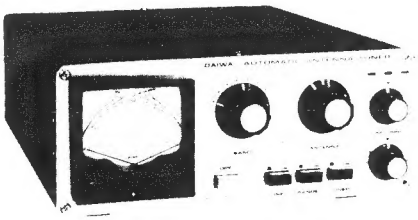

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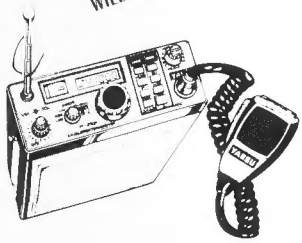

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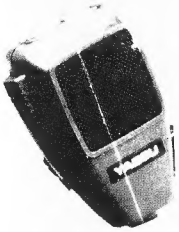

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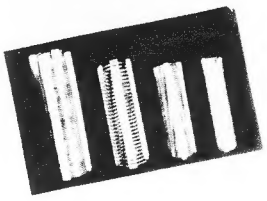
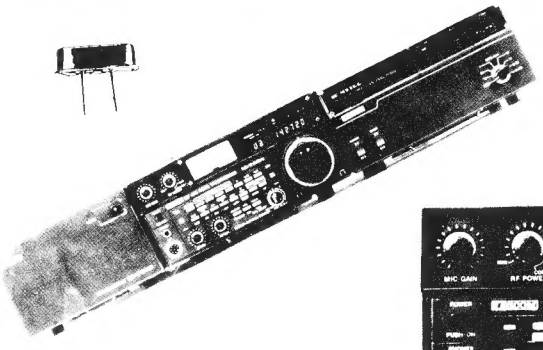


BRIGHT STAR CRYSTALS PTY LTD

G.F.S. Electronic Imports



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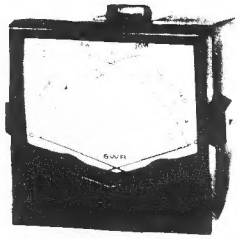
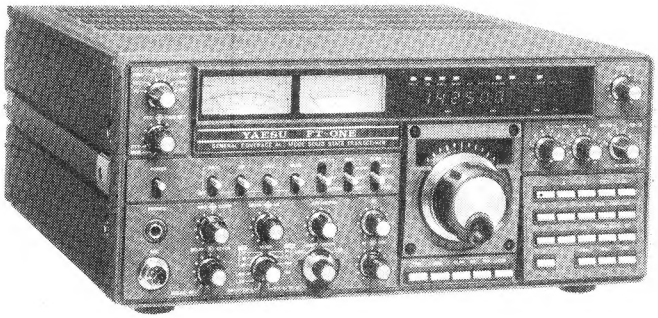


ICOM

YAESU — NEW SUPER TRANSCEIVER FT-ONE

bail



This state-of-the art transceiver has a whole range of features for the discerning amateur.

CPU controlled — General coverage receiver 150 KHz — 29-99 mHz — 100 watts output. — SSB, CW, AM, FSK, FM (optional) modes — Wide dynamic receiving range of more than 95dB — IF Shift — 22 poles of crystal filtering — 10 VFOs allowing split frequency operation

Full break-in feature for CW operators — AC or DC operation — VOX, Speech Processor, AMGC, variable threshold NB, Audio Peak, Notch Filters — Weight approximately 17 kg — Dimensions 370(W) x 157(H) x 350(D) mm

YAESU

FT-720R VHF/UHF FM TRANSCEIVER

ADVANCED PLL TECHNOLOGY

FEATURES:

CHOOSE YOUR FAVOURITE BAND

The FT-720R Control Head may be used with either the FT-720V 2 Meter RF Deck or the FT-720U 70 cm RF Deck.

OPTIONAL CONTROL BOX

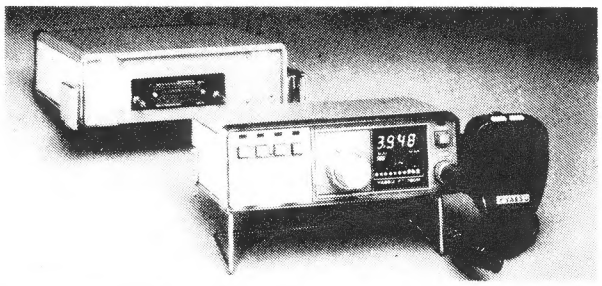
The S-72 control box option will allow you to connect the control head the 2 meter RF Deck and the 70 cm RF Deck together, thus enabling you to choose the desired band is simply by throwing one switch!

SCANNING

Fingertip controls on the microphone provide instant up/down scanner control. The scanner may be programmed to stop on a busy or clear channel, if you wish.

FIVE MEMORY CHANNELS WITH PRIORITY FEATURE

As many as five memory channels may be programmed, for instant return to a favourite repeater or simplex channel. One of the memory channels may be used as a priority channel, as well and the microprocessor will then search between the priority channel and your main dial frequency!



SPECIFICATIONS:

	FT-720RV	FT-720RU
Frequency coverage:	144.00—147.99 MHz 144.00—145.99 MHz	430—439.975 MHz 440—449.975 MHz
Synthesizer steps:	10 or 12.5 kHz	25 kHz
Power output:	10 watts (RV model) 25 watts (RVH model)	10 watts
Receiver type:	Double conversion superheterodyne	Double conversion superheterodyne
First IF:	10.7 MHz	16.9 MHz
Second IF:	455 kHz	455 kHz
Sensitivity:	0.32 uV for 20 dB quieting	0.5 uV for 20 dB quieting
Selectivity:	±6 kHz (—6 dB) ±12 kHz (—60 dB)	±12 kHz (—6 dB) ±24 kHz (—60 dB)
Power requirements:	13.8 VDC, negative ground 13.6 VDC (RVH model)	13.8 VDC, negative ground
Current consumption:	Approx. TX 3.5A (RV model) TX 6.5A (RHV model) RX 0.5A	Approx. TX 4.5A RX 0.5A
Case size:	150(W) x 50(H) x 247(D) mm	150(W) x 50(H) x 247(D) mm
Weight:	Approx. 2.5kg	Approx. 2.5kg

Specifications subject to change without notice.

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